

# JAPAN

## EDICT OF GOVERNMENT

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JIS Z 8500 (2002) (English): Ergonomics -- Basic  
human body measurements for technological design

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*The citizens of a nation must  
honor the laws of the land.*

Fukuzawa Yukichi

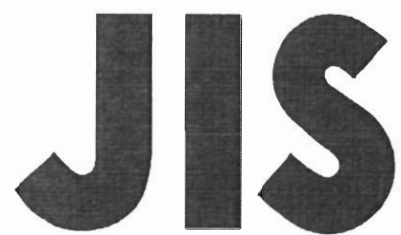
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JAPANESE  
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STANDARD

Translated and Published by  
Japanese Standards Association

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**JIS Z 8500** : 2002

(JES/JSA)

**Ergonomics—Basic human body  
measurements for technological  
design**

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ICS 13.180

Reference number : JIS Z 8500 : 2002 (E)

## Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Ergonomics Society (JES)/the Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS Z 8500 : 1994** is replaced with this Standard.

In order to conform to the International Standard, this revision has been prepared based on **ISO 7250 : 1996** *Ergonomics—Basic human body measurements for technological design*.

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the original JIS is to be the final authority.

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## **Ergonomics—Basic human body measurements for technological design**

**Introduction** This Japanese Industrial Standard has been prepared based on the first edition of **ISO 7250 Ergonomics—Basic human body measurements for technological design** published in 1996 with modifying some technical contents.

The portions underlined with dots in this Standard are the matters not included in the original International Standard. The list of modified contents is given in the Annex 2 (informative) together with the explanation.

The well-being of people is greatly dependent on their geometrical relationship with various factors such as clothing, places of work, transportation, homes and recreational activities. To ensure harmony between people and their environments, it is necessary to quantify the size and shape of people for optimization of the technological design of the workplace and the home environment.

This Standard may be used in conjunction with national or international regulations or agreements to assure harmony in defining population groups. In its various applications, it is anticipated that the basic list will be supplemented by specific additional measurements.

**1 Scope** This Standard provides a description of anthropometric measurements which can be used as a basis for comparison of population groups.

The basic list specified in this Standard is intended to serve as a guide for ergonomists who are required to define population groups and apply their knowledge to the geometric design of the places where people work and live.

This list is not intended to serve as a guide for how to take anthropometric measurements, but it gives information to the ergonomist and designer on the anatomical and anthropometrical bases and principles of measurement which are applied in the solution of design tasks.

Remarks : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 7250 : 1996 *Ergonomics—Basic human body measurements for technological design* (MOD)

**2 Definitions** For the purposes of this Standard, the following definitions apply:

**2.1 population group** Group of people having some common environment or activity.

**2.2 Anthropometric terms**

- a) **midsagittal plane** Vertical plane dividing the human body into right and left halves.
- b) **sagittal plane** All planes parallel to the midsagittal plane.
- c) **midsagittal line** Line at which the midsagittal plane crosses with the surface of the body.
- d) **frontal plane** Vertical plane perpendicular to the midsagittal plane which divides the body into the front and rear halves.
- e) **distal** Away from the main mass of the body.
- f) **proximal** Part of arms and legs nearest to the torso.
- g) **radial** Side of radius bone in the forearm (thumb side).
- h) **ulnar** Side of ulna bone in the forearm (little finger side).
- i) **tibial** Side of tibial bone in the lower leg (big toe side).
- j) **fibular** Side of fibula bone in the lower leg (little toe side).
- k) **biceps femoris** One of large muscle in the rear side of the thigh.
- l) **deltoid muscle** Large muscle on the lateral border of the upper arm in the shoulder region.
- m) **gluteal fold** Fold of the skin making a boundary between the buttocks and the rear surface of the thigh.
- n) **grip axis** Axis of the fist corresponding with the longitudinal axis of a rod held in the hand.
- o) **lateral** Towards the side of the body.
- p) **medial** Towards the midline of the body.
- q) **Frankfurt plane** Plane determined by three points of right and left tragions and left orbitale.

**3 Measuring points** The points of anthropometric measurement are as given in Table 1 and Figure 1.

Remarks : In order to make the measuring points in the Table 1 correspond to the figure of the human body in the Figure 1, the number of the measuring points is shown in the Figure 1.

Table 1 Measuring points

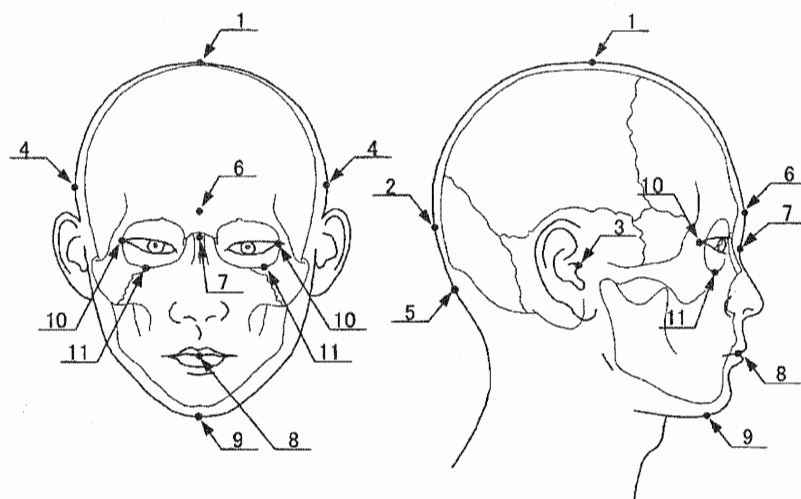
No.	Measuring point	Definition	Figure to be referred	English equivalent (informative)
1	TÔTYÔTEN	The highest point of the head in the midsagittal plane.	Fig. 1 a), b)	vertex
2	KÔTÔTEN	The point on the midsagittal line at the most distal position from the glabella.	Fig. 1 a)	opistocranion
3	ZISYUTEN	The point on the root above the tragus (protrusion in front and outside of the ear hole).	Fig. 1 a)	tragion
4	SOKUTÔTEN	The most exterior point on the occiput. The left and right euryons are within the same frontal plane.	Fig. 1 a)	euryon
5	NUKÂRE	On the midsagittal line, the lowest touchable point of the occipital bone between the nape muscles.	Fig. 1 a)	nuchale
6	MIKENTEN	The most anterior point of the forehead between the brow ridges in the midsagittal line.	Fig. 1 a)	glabella
7	BIANTEN	The cross point of sewn up line between forehead bone and nasal bone, with the midsagittal line.	Fig. 1 a)	sellion
8	KÔTEN	The point where the mouth opening (space surrounded by the upper and lower lips) is cut by the midsagittal line.	Fig. 1 a)	stomion
9	OTOGAITEN	The lowest point of lower edge of the chin on the midsagittal line.	Fig. 1 a)	gnathion
10	GAIGANKAKUTEN	The point where the upper eyelid joins with the lower eyelid at the corner of the eye.	Fig. 1 a)	ectocanthion
11	GANKATEN	The lowest point of the lower edge of the eye hole (the hole on the head bone where eye ball is kept).	Fig. 1 a)	orbitale
12	KEITUITEN	The tip of the spinous process (protuberance projecting from the rear side of each bone of which the spine consists) of 7th cervical vertebra.	Fig. 1 b)	cervicale

**Table 1** (continued)

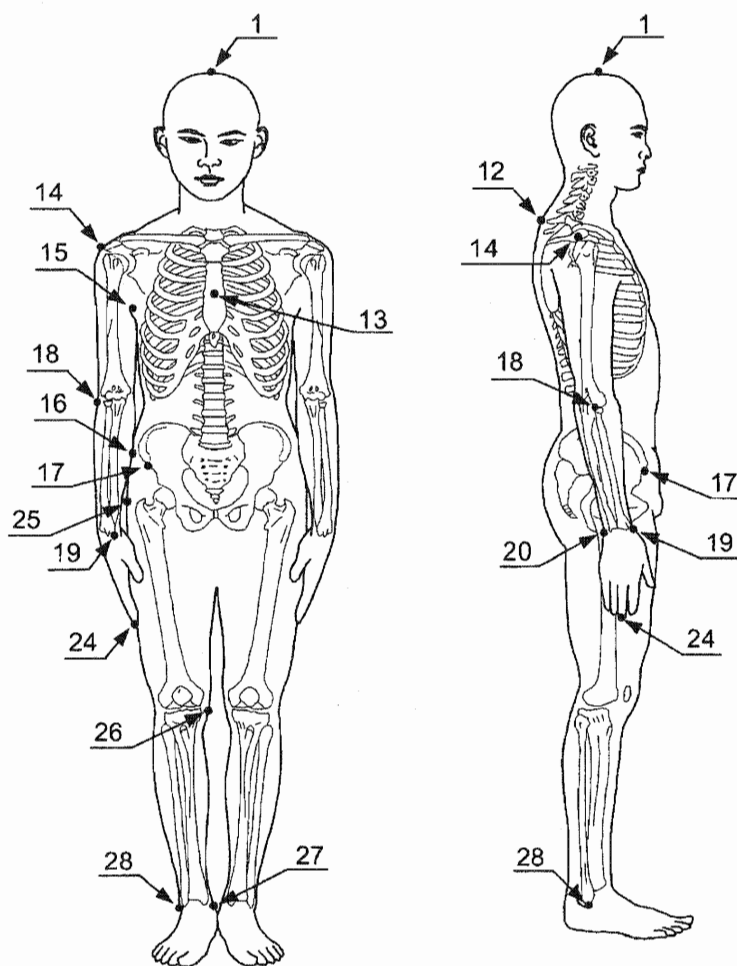
No.	Measuring point	Definition	Figure to be referred	English equivalent (informative)
13	KYÔKOTU-TYÛTEN	The point on the union of the straight line linking the left and right 4th sternebrae (the joint between the sternum and the rib) and the midsagittal line on the front breast surface.	Fig. 1 b)	mesosternale
14	KENPÔTEN	The most exterior point of the outer edge of the hump of the scapula (the large flat and protrusive part of the end of the shelf like protuberance on the back side surface of the scapula).	Fig. 1 b)	acromion
15	ZEN'EKIKATEN	The lowest point on the part where the greater pectoral on the front edge of the armpit connects.	Fig. 1 b)	anterior armpit point
16	TYÔKOTU-RYÔTEN	The most exterior protrusion of the bicristal (height of the bone extending along the upper edge of the pelvis).	Fig. 1 b)	iliocristale
17	TYÔKYOKUTEN	The point on the lowest edge of the upper and front iliospinale (the protrusion on the front edge of the bicristal).	Fig. 1 b)	iliospinale anterior
18	TÔKOTUTEN	The point on the outside proximal end of the radiale top (the disc-shaped part at the proximal end of the radius).	Fig. 1 b)	radiale
19	TÔKOTU-KEITOTUTEN	The point on the most distal end of the stylus of the radius (the sharp pointed part of the distal end of the radius).	Fig. 1 b), c)	stylium
20	SYAKKOTU-KEITOTUTEN	The point on the most distal end of the stylus of the ulna (the thin part protruding from the bulge of the ulna).	Fig. 1 b), c)	stylium ulnare
21	TÔSOKU-TYÛSYUTEN	Of the condyle of the second metacarpus (the bulging part on the distal of the metacarpus), the point protruding most to the radius side.	Fig. 1 c)	metacarpale radiale
22	SYAKUSOKU-TYÛSYUTEN	Of the condyle of the fifth metacarpus (the bulging part on the distal of the metacarpus), the point protruding most toward the ulna side.	Fig. 1 c)	metacarpale ulnare

Table 1 (concluded)

No.	Measuring point	Definition	Figure to be referred	English equivalent (informative)
23	<u>SISETUTEN</u>	The point on the proximal end of the proximal phalanx of finger on the back side of the hand. The phalanges being in every finger are called thumb to little finger phalange.	Fig. 1 c)	phalange
24	<u>SISENTE</u>	Of the top of the middle finger, the most distal point.	Fig. 1 b), c)	dactylion
25	<u>TENSITE</u>	The point on the highest edge of the great trochanter of the thighbone (the big protrusion on the upper and outer side of the thighbone).	Fig. 1 b)	trochanterion
26	<u>KEIKOTUTEN</u>	The highest (proximal) point on the anteromedial margin of the tibia (the bulging part on the upper and inside part of the tibia).	Fig. 1 b)	tibiale
27	<u>NAIKATEN</u>	The lowest point of the sphyron of the tibia (the bulge on the inside of the lowest end of the tibia, namely, the inside ankle).	Fig. 1 b)	sphyron
28	<u>GAIKATEN</u>	The lowest point of the sphyron fibulare of the fibula (the bulge on the outside of the lowest part of the fibula, namely, the outside ankle).	Fig. 1 b)	sphyron fibulare
29	<u>SYÔTEN</u>	The point of the rearmost protrusion of the calcaneus (heel bone).	Fig. 1 d)	pternion
30	<u>SOKUSENTE</u>	The point of toe end on the position farthest from the heel point.	Fig. 1 d)	acropodion
31	<u>KEISOKU-TYÛSOKUTEN</u>	The point protruding most toward the tibia side out of the condyle of the first metatarsale.	Fig. 1 d)	metatarsale tibiale
32	<u>HISOKU-TYÛSOKUTEN</u>	The point protruding most toward the fibula side out of the condyle of the fifth metatarsale.	Fig. 1 d)	metatarsale fibulare



a)



b)

**Figure 1 Measuring points**

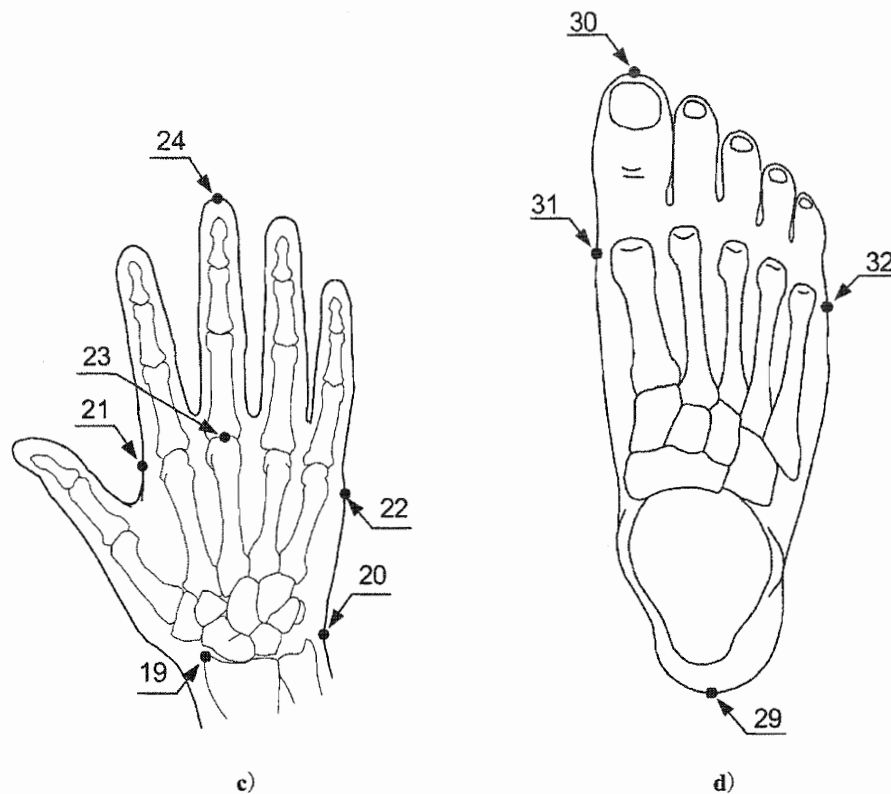


Figure 1 (concluded)

**4 Measuring conditions** It is important that the following conditions are documented together with the numerical results of any survey. Photographs or detailed sketches of measurements and procedures are recommended.

**4.1 Clothing of subject** During measurement, the subject shall be nude or shall wear only minimal clothing and shall be bareheaded and without shoes.

**4.2 Support surfaces** Standing surfaces (floors), platforms or sitting surfaces shall be flat, horizontal and not compressible.

**4.3 Body symmetry** For measurements which may be taken on either side of the body, it is recommended that both sides are measured. If this is not possible, it should be indicated on which side the measurement was taken.

**4.4 Measuring tools** The standard measuring tools which are recommended are the anthropometer, sliding calipers, spreading calipers, weighing scale and tape measure.

**4.4.1 The anthropometer** is a specialized tool for measuring linear distances between points on the body and standard reference surfaces, such as the floor or a seat platform.



**4.4.2 Sliding and spreading calipers** are used for measuring the breadth and depth of body segments, as well as the distances between reference marks.

**4.4.3 A tape measure, measuring cube and rod** are used for measuring body circumferences. To determine the maximal posterior protrusion of a seated person, a measuring cube 200 mm on each side is used. To determine grip measurements, a rod 20 mm in diameter is used.

**4.4.4 Other measuring tools** Section paper is used when measuring linear distances between standard reference surfaces and measuring points unable to be measured by the anthropometer. Height gauge is used when measuring heights from the standard reference surfaces to be measuring points the absolute value of which is small. Measuring cone the diameter of which increases by 5 mm with every 80 mm heights is used for measurements of grip interval diameter. For measuring foot length, a foot length measuring instrument (full wearing type) may be used.

**4.5 Further conditions** For chest and other measurements affected by breathing, it is recommended that they are taken during gentle breathing.

**4.6 Posture in measurement** The basic condition for the posture in the measurements shall be as follows:

- a) **Standing posture** The subject stands erect extending the backbone line without strain, making shoulder feel easy, hanging free the upper limbs down and hold the both heels together.
- b) **Sitting posture** The subject sits extending the backbone line without strain, making shoulder feel easy, hanging free the upper limbs down and crooking both elbows at approximately right angle. As for the lower limbs, the left and right thighs are kept approximately parallel to each other, the both knees are put at approximately right angle and the soles are attached to the floor.
- c) **Frankfurt plane** The Frankfurt plane is kept approximately horizontal.

**5 Measuring items** The basic measuring items of anthropometric measurements shall be as given below. The measuring items and the posture in measurements are shown in the Attached Figure 1 as a whole.

Thigh length and lower leg length are shown in the Annex 1.

Remarks 1 If the same items are in **ISO 7250 : 1996**, the item numbers of **ISO 7250 : 1996** are given in parentheses.

2 In order to make the measuring items given in the following correspond to the general view in the Attached Figure 1, the ideographs of measuring items are given in the Attached Figure 1 except the body weight.

### 5.1 Items on the head

#### 5.1.1 Total head height

Description: Vertical distance from vertex to the gnathion.

Method: Subject keeps the head to be orientated in the Frankfurt plane.

Instrument: Large sliding caliper

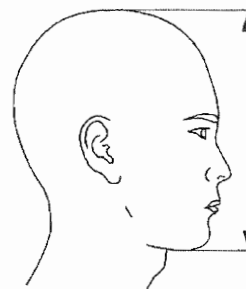


Figure 5.1.1

#### 5.1.2 Tragion to vertex height

Description: Vertical distance from the vertex to the tragion.

Method: Subject keeps the head to be orientated in the Frankfurt plane.

Instrument: Large sliding caliper

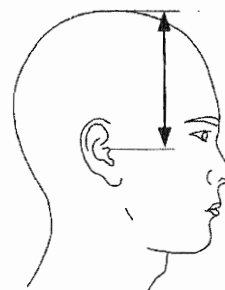


Figure 5.1.2

#### 5.1.3 Ectocanthion to vertex height

Description: Vertical distance from the vertex to the ectocanthion.

Method: Subject keeps the head to be orientated in the Frankfurt plane.

Instrument: Large sliding caliper

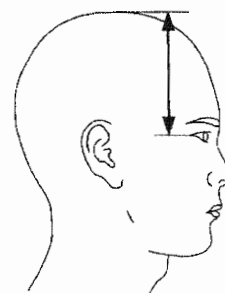


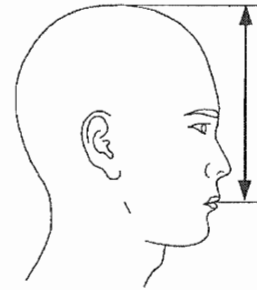
Figure 5.1.3

#### **5.1.4 Stomion to vertex height**

Description: Vertical distance from the vertex to the stomion.

Method: Subject keeps the head to be orientated in the Frankfurt plane.

Instrument: Large sliding caliper



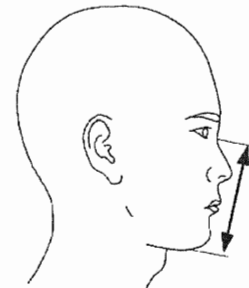
**Figure 5.1.4**

#### **5.1.5 Face length (ISO 7250 : 4.3.11)**

Description: Distance along a straight line between the sellion to the gnathion.

Method: Subject keeps the month closed.

Instrument: Spreading caliper



**Figure 5.1.5**

#### **5.1.6 Head length (ISO 7250 : 4.3.9)**

Description: Distance along a straight line between the glabella and the opistocranium.

Method: Position of head has no influence on the measurement.

Instrument: Spreading caliper



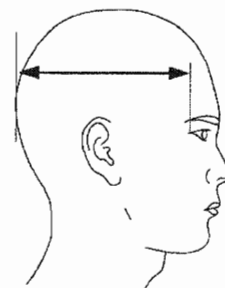
**Figure 5.1.6**

#### **5.1.7 Occiput to ectocanthion distance**

Description: Distance along a horizontal straight line between the vertical wall surface the rearmost point of the skull touches and the ectocanthion.

Method: Subject makes the rearhead touch close vertical wall surface and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer



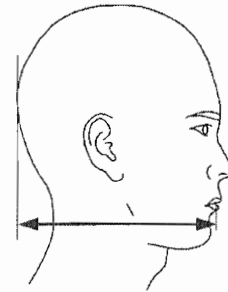
**Figure 5.1.7**

#### **5.1.8 Occiput to stomion distance**

Description: Distance along a horizontal straight line between the vertical wall surface the rearmost point of the skull touches and the stomion.

Method: Subject makes the rearhead touch close vertical wall surface and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer



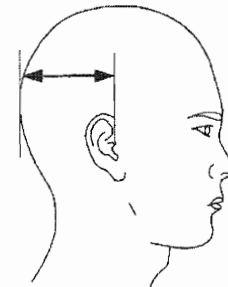
**Figure 5.1.8**

#### **5.1.9 Occiput to tragon distance**

Description: Distance along a horizontal straight line between the vertical wall surface the rearmost point of the skull touches and the tragon.

Method: Subject makes the rearhead touch the vertical wall surface and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer



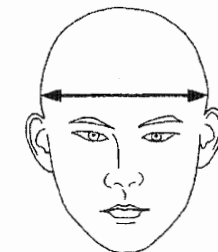
**Figure 5.1.9**

#### **5.1.10 Head breadth (ISO 7250 : 4.3.10)**

Description: Maximum breadth of head above the ears, measured perpendicular to the midsagittal plane.

Method: Position of head has no influence on the measurement.

Instrument: Spreading caliper



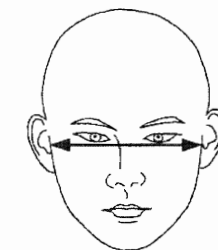
**Figure 5.1.10**

#### **5.1.11 Bitracion breadth**

Description: Distance along a straight line between the right and left bitragions.

Method: Position of head has no influence on the measurement.

Instrument: Spreading caliper



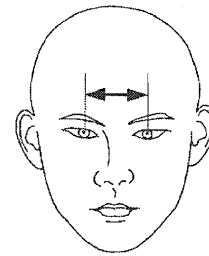
**Figure 5.1.11**

#### **5.1.12 Interpupillary breadth**

Description: Distance along a straight line between the pupil centres when seeing forward horizontally.

Method: Subject sees forward horizontally.

Instrument: Sliding caliper



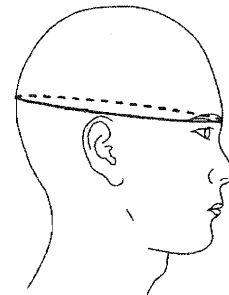
**Figure 5.1.12**

#### **5.1.13 Head circumference (ISO 7250 : 4.3.12)**

Description: Circumference of head measured along line starting from and coming to the glabella passing through the opistocranium.

Method: Tape measure is held on the glabella and led around the head so as to pass over the rearmost point of the skull. Hair shall be included in the measurement.

Instrument: Tape measure



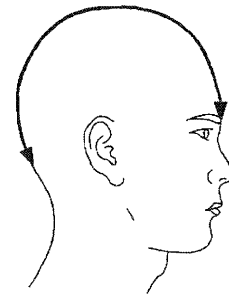
**Figure 5.1.13**

#### **5.1.14 Sagittal arc (ISO 7250 : 4.3.13)**

Description: Length of arc from the glabella to the nuchale passing through the vertex along the head surface.

Method: Tape measure is held on the glabella and led over the head so as to pass over the vertex and the rearmost point of the skull for measuring the distance to the nuchale.

Instrument: Tape measure



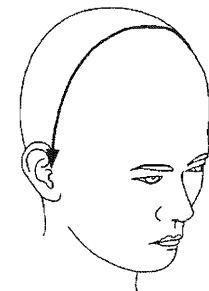
**Figure 5.1.14**

#### **5.1.15 Bitragion arc (ISO 7250 : 4.3.14)**

Description: Length of arc from one tragon over the crown of the head to other tragon passing over the vertex.

Method: Tape measure is hold on the tragon of one side of the head and led over the crown to the tragon on the other side. Hair shall be included in the measurement.

Instrument: Tape measure



**Figure 5.1.15**

## 5.2 Measurements taken while subject stands

### 5.2.1 Body mass (weight) (ISO 7250 : 4.1.1)

Description: Total mass (weight) of the body.

Method: Subject stands on a weighing scale.

Instrument: Weighing scale

### 5.2.2 Stature (body height) (ISO 7250 : 4.1.2)

Description: Vertical distance from the floor to the vertex.

Method: Subject takes standing posture and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer

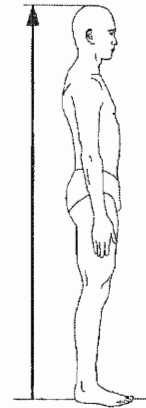


Figure 5.2.2

### 5.2.3 Eye height (ISO 7250 : 4.1.3)

Description: Vertical distance from the floor to the ectocanthion.

Method: Subject takes standing posture and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer

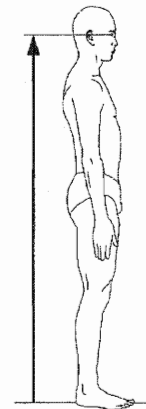


Figure 5.2.3

### 5.2.4 Cervicale height

Description: Vertical distance from the floor to the cervicale.

Method: Subject takes standing posture and keeps the head to be orientated in the Frankfurt plane.

Instrument: Anthropometer

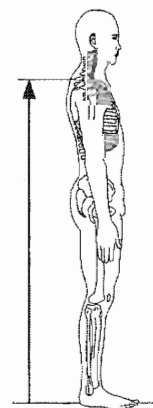


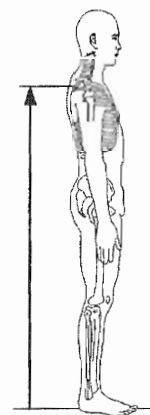
Figure 5.2.4

#### **5.2.5 Shoulder height (ISO 7250 : 4.1.4)**

Description: Vertical distance from the floor to the acromion.

Method: Subject takes standing posture.

Instrument: Anthropometer



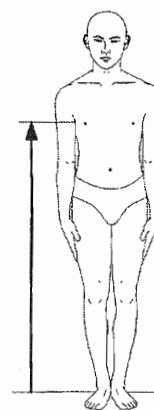
**Figure 5.2.5**

#### **5.2.6 Anterior axillary height**

Description: Vertical distance from the floor to the anterior arm-pit point.

Method: Subject takes standing posture.

Instrument: Anthropometer



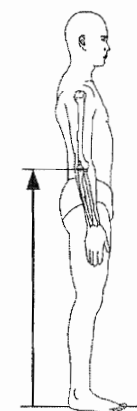
**Figure 5.2.6**

#### **5.2.7 Radiale height**

Description: Vertical distance from the floor to the radiale.

Method: Subject takes standing posture.

Instrument: Anthropometer



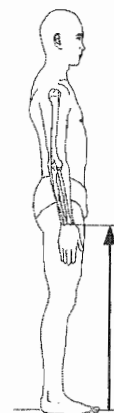
**Figure 5.2.7**

#### **5.2.8 Radiale stylium height**

Description: Vertical distance from the floor to the stylium.

Method: Subject takes standing posture.

Instrument: Anthropometer



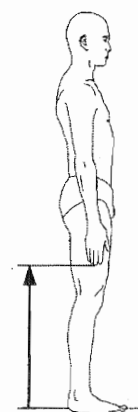
**Figure 5.2.8**

#### **5.2.9 Dactylion height**

Description: Vertical distance from the floor to the dactylion.

Method: Subject takes standing posture. The fingers are extended.

Instrument: Anthropometer



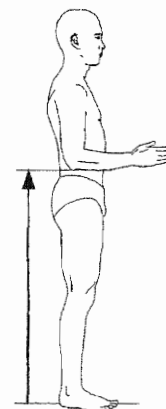
**Figure 5.2.9**

#### **5.2.10 Elbow height (ISO 7250 : 4.1.5)**

Description: Vertical distance from the floor to the lowest bony point of the bent elbow.

Method: Subject takes standing posture. Upper arm hangs freely downwards, elbow is flexed at right angle, palm is faced inward and forearm is extended forward.

Instrument: Anthropometer



**Figure 5.2.10**



#### 5.2.11 Fist (grip axis) height (ISO 7250 : 4.4.4)

Description: Vertical distance from the floor to the grip axis of the fist.

Method: Subject takes standing posture. Hand holds the measuring rod in the sagittal plane with grip axis horizontal.

Instrument: Anthropometer, 20 mm diameter rod

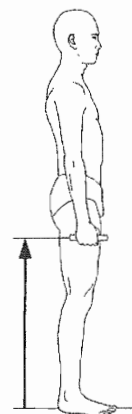


Figure 5.2.11

#### 5.2.12 Dactylion height, over head

Description: Vertical distance from the floor to the dactylion when the arms are extended upward.

Method: Subject takes standing posture, with the arms raised.

Instrument: Section paper.

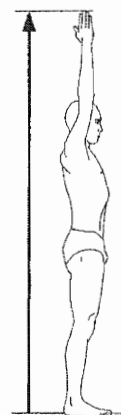


Figure 5.2.12

#### 5.2.13 Iliac spine height, standing (ISO 7250 : 4.1.6)

Description: Vertical distance from the floor to the anterosuperior iliac spine (the most downward-directed point of the iliac crest).

Method: Subject takes standing posture.

Instrument: Anthropometer

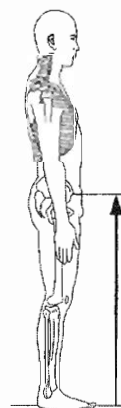


Figure 5.2.13

#### 5.2.14 Trochanterion height

Description: Vertical distance from the floor to the trochanterion.

Method: Subject takes standing posture.

Instrument: Anthropometer

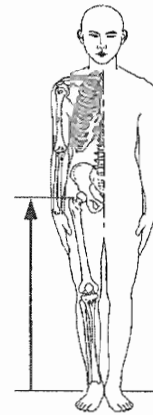


Figure 5.2.14

#### 5.2.15 Crotch height (ISO 7250 : 4.1.7)

Description: Vertical distance from the floor to the distal part of the inferior ramus of the public bone.

Method: Subject first stands with legs a maximum of 100 mm apart and the movable arm of the measuring instrument is placed against the inner surface of the thigh in such a way that, when pushed higher, it gently presses the public bone. Subject then closes the legs and takes standing posture. The arm breadth is added to the dimension read.

Instrument: Anthropometer

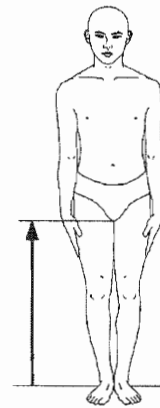


Figure 5.2.15

#### 5.2.16 Tibiale height (ISO 7250 : 4.1.8)

Description: Vertical distance from the floor to the tibiale.

Method: Subject takes standing posture.

Instrument: Anthropometer

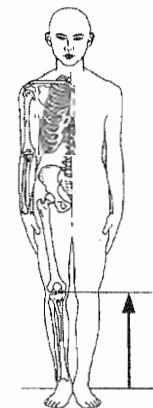


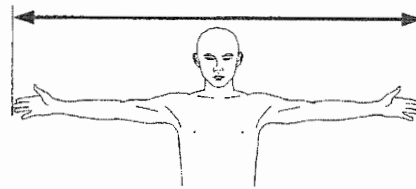
Figure 5.2.16

### 5.2.17 Span

Description: Distance along a straight line between the right and left dactylions when extending the both arms freely rightward and leftward in a state to be orientated in a horizontal line.

Method: Subject takes standing posture with both arms extended horizontally.

Instrument: Anthropometer



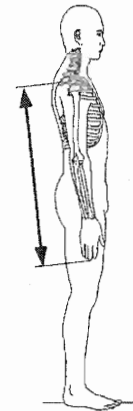
**Figure 5.2.17**

### 5.2.18 Upper limb length

Description: Distance along a straight line between the acromion to the dactylion.

Method: Subject takes standing posture. Fingers are extended.

Instrument: Large sliding caliper



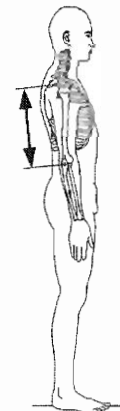
**Figure 5.2.18**

### 5.2.19 Upper arm length

Description: Distance along a straight line from the acromion to the radiale.

Method: Subject takes standing posture.

Instrument: Large sliding caliper



**Figure 5.2.19**

#### 5.2.20 Forearm length

Description: Distance along a straight line from the radiale to the stylium.

Method: Subject takes standing posture.

Instrument: Large sliding caliper

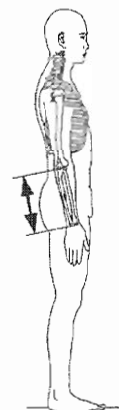


Figure 5.2.20

#### 5.2.21 Shoulder-elbow length (ISO 7250 : 4.2.6)

Description: Vertical distance from the acromion to the bottom of the elbow bent at a right angle with the forearm horizontal.

Method: Subject takes standing posture. Upper arms hang freely downwards, elbows are flexed at a right angle, palms are faced inwards and forearms are horizontal. The measurement may be taken in sitting posture.

Instrument: Large sliding caliper

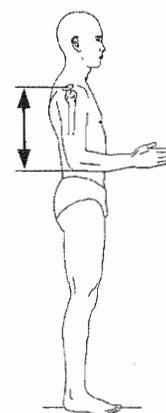


Figure 5.2.21

#### 5.2.22 Forearm-fingertip length (ISO 7250 : 4.4.5)

Description: Horizontal distance from the back of the elbow to the fingertips, with elbow bent at right angle.

Method: Subject takes standing posture. Upper arms hang freely downwards, elbows are flexed at right angle, palms are faced inwards and forearms are horizontally extended. Fingers are extended. The measurement may be taken in sitting posture.

Instrument: Large sliding caliper

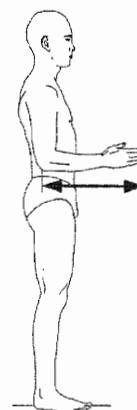


Figure 5.2.22

#### 5.2.23 Elbow-grip length (ISO 7250 : 4.4.3)

Description: Horizontal distance from the back of the elbow to the grip axis, with elbow bent at right angle.

Method: Subject takes standing posture. Upper arms hang freely downwards, elbow is flexed at right angle, and forearms are extended forwards and horizontal. Hand holds measuring rod with grip axis vertical. The measurement may be taken in sitting posture.

Instrument: Large sliding caliper, 20 mm diameter rod



Figure 5.2.23

#### 5.2.24 Arm reach from back

Description: Horizontal distance from a vertical surface against which the back of the body is firmly pushed with arm extended horizontally to the dactylion.

Method: Subject stands fully erect with shoulder blades and buttocks firmly against the vertical surface. Arm fully extended horizontally, fingers extended and palms faced inwards.

Instrument: Anthropometer



Figure 5.2.24

#### 5.2.25 Grip reach; forward reach (ISO 7250 : 4.4.2)

Description: Horizontal distance from a vertical surface against which the back of the body is firmly pushed to the grip axis of the hand.

Method: Subject stands fully erect with shoulder blades and buttocks firmly against the vertical surface, arm fully extended horizontally. Hand holds measuring rod with grip axis vertical.

Instrument: Anthropometer, 20 mm diameter rod

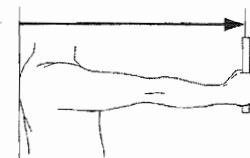


Figure 5.2.25

#### 5.2.26 Wall-ectocanthion distance

Description: Horizontal distance from a vertical surface against which the back of the body is firmly pushed to the ectocanthion.

Method: Subject stands fully erect with shoulder blades and buttocks firmly against the vertical surface. Head is orientated in the Frankfurt plane.

Instrument: Anthropometer

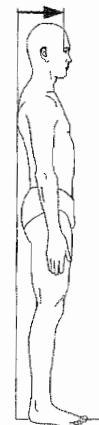


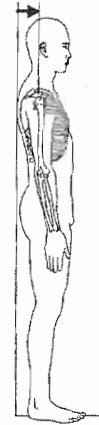
Figure 5.2.26

**5.2.27 Wall-acromion distance (ISO 7250 : 4.4.1)**

Description: Horizontal distance from a vertical surface against which the back of the body is firmly pushed to the acromion.

Method: Subject stands fully erect, with shoulder blades and buttocks firmly against a vertical surface, equal pressure of shoulders against the vertical surface, arms hanging naturally.

Instrument: Anthropometer



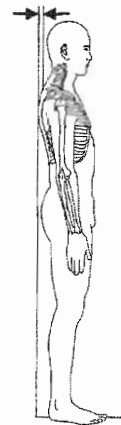
**Figure 5.2.27**

**5.2.28 Wall-cervicale distance**

Description: Horizontal distance from a vertical surface against which the back of the body is firmly pushed to the cervicale.

Method: Subject stands fully erect, with shoulder blades and buttocks firmly against a vertical surface. Head is orientated in the Frankfurt plane.

Instrument: Anthropometer



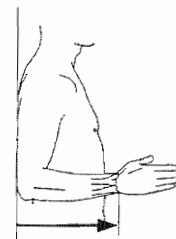
**Figure 5.2.28**

**5.2.29 Elbow-wrist length (ISO 7250 : 4.2.7)**

Description: Horizontal distance from wall to wrist (ulnar styloid process).

Method: Subject takes standing posture, with back to wall. Upper arms hanging freely downwards, elbow flexed at right angle and touching wall, forearms horizontal. Distance from the wall to the stylium ulnare is measured. The measurement may be taken in standing posture.

Instrument: Large sliding caliper



**Figure 5.2.29**

**5.2.30 Shoulder (biacromial) breadth (ISO 7250 : 4.2.8)**

Description: Distance along a straight line from acromion to acromion.

Method: Subject takes standing posture or sitting posture.

Instrument: Large sliding caliper



**Figure 5.2.30**

**5.2.31 Shoulder (bideltoid) breadth (ISO 7250 : 4.2.9)**

Description: Distance across the maximum lateral protrusions of the right and left deltoid muscles.

Method: Subject takes standing posture or sitting posture.

Instrument: Large sliding caliper



**Figure 5.2.31**

**5.2.32 Chest breadth, standing (ISO 7250 : 4.1.11)**

Description: Distance along a horizontal line connecting the maximum lateral protrusions at mesosternal level.

Method: Subject takes standing posture. Females wear their usual brassiere.

Instrument: Large sliding caliper or large spreading caliper



**Figure 5.2.32**

#### 5.2.33 Maximum body breadth

Description: Horizontal distance between the maximum lateral protrusions of right and left arms.

Method: Subject takes standing posture.

Instrument: Large sliding caliper or large spreading caliper.

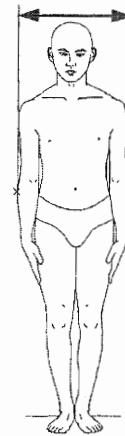


Figure 5.2.33

#### 5.2.34 Elbow-to-elbow breadth (ISO 7250 : 4.2.10)

Description: Maximum horizontal distance between the lateral surfaces of the elbow region.

Method: Subject takes standing posture. Upper arms hang down and lightly touch the sides of the body. Forearms are extended horizontally and parallel to each other and floor. Measurement is taken without pressing into the flesh at elbows, and may be taken in sitting posture.

Instrument: Large sliding caliper or large spreading caliper



Figure 5.2.34

#### 5.2.35 Bicristal breadth

Description: Distance between the right and left iliospinale antérieures.

Method: Subject takes standing posture.

Instrument: Large sliding caliper or large spreading caliper

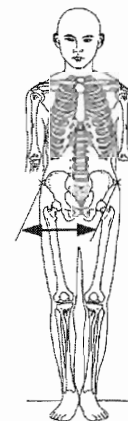


Figure 5.2.35



#### 5.2.36 Hip breadth, standing (ISO 7250 : 4.1.12)

Description: Maximum horizontal distance between the right and left protrusions of the hip.

Method: Subject takes standing posture. Measurement is taken without pressing into the flesh of the hips.

Instrument: Large sliding caliper or large spreading caliper.

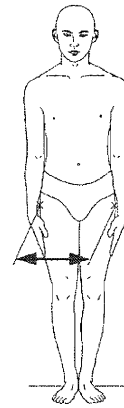


Figure 5.2.36

#### 5.2.37 Chest depth, standing (ISO 7250 : 4.1.9)

Description: Horizontal distance between the front and rear parts of the torso in the midsagittal plane at mesosternal level.

Method: Subject takes standing posture.

Instrument: Large sliding caliper with curved arms or large spreading caliper

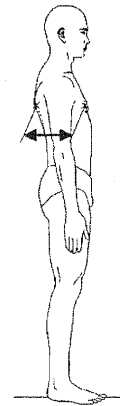


Figure 5.2.37

#### 5.2.38 Thorax depth at mesosternale

Description: Maximum horizontal distance between the protrusions of front and rear surfaces of the torso at mesosternal level.

Method: Subject takes standing posture. Females wear their usual brassiere.

Instrument: Large sliding caliper

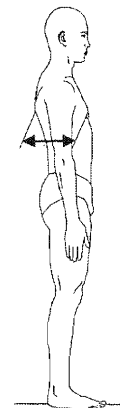


Figure 5.2.38

**5.2.39 Thorax depth at the nipple (ISO 7250 : 4.2.16)**

Description: Maximum horizontal distance between the protrusions of the front and rear surfaces of the torso at the level of the nipple.

Method: Subject takes standing posture. Females wear their usual brassiere.

Instrument: Large sliding caliper



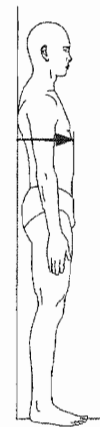
**Figure 5.2.39**

**5.2.40 Body depth, standing (ISO 7250 : 4.1.10)**

Description: Maximum depth of the body.

Method: Subject stands erect with back contacted firmly against a vertical wall and with feet together. Arms are hanging freely downwards. Horizontal distance from the wall surface to the foremost point of the body is measured. Females wear their usual brassiere.

Instrument: Anthropometer



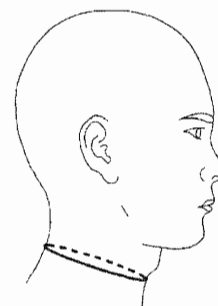
**Figure 5.2.40**

**5.2.41 Neck circumference (ISO 7250 : 4.4.8)**

Description: Circumference of neck so measured as to orthogonally cross with the neck axis at a point just below the bulge at the thyroid cartilage.

Method: Subject takes standing posture with head in the Frankfurt plane. The measurement may be taken in sitting posture.

Instrument: Tape measure



**Figure 5.2.41**

#### **5.2.42 Chest circumference at mesosternale**

Description: Circumference of the chest measured at mesosternale level.

Method: Subject takes standing posture. Females wear their usual brassiere.

Instrument: Tape measure



**Figure 5.2.42**

#### **5.2.43 Chest circumference (ISO 7250 : 4.4.9)**

Description: Circumference of the torso measured at nipple level.

Method: Subject takes standing posture. Females wear their usual brassiere.

Instrument: Tape measure



**Figure 5.2.43**

#### **5.2.44 Waist circumference (ISO 7250 : 4.4.10)**

Description: Circumference of trunk at a level midway between the lowest ribs and the upper iliac crest.

Method: Subject takes standing posture. Subject is asked to relax the abdominal muscles.

Instrument: Tape measure



**Figure 5.2.44**

**5.2.45 Upper arm circumference**

Description: Circumference of upper arms measured at a level of the most bulging part.

Method: Subject takes standing posture.

Instrument: Tape measure



**Figure 5.2.45**

**5.2.46 Forearm circumference**

Description: Circumference of forearms measured at a level of the most bulging part.

Method: Subject takes standing posture.

Instrument: Tape measure



**Figure 5.2.46**

**5.2.47 Wrist circumference (ISO 7250 : 4.4.11)**

Description: Circumference of wrist at the level of the styloid processes of the radius and ulna.

Method: Subject holds forearm horizontal with hand over-stretched and fingers extended.

Instrument: Tape measure



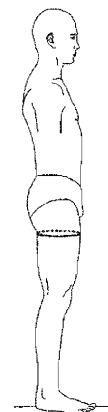
**Figure 5.2.47**

#### **5.2.48 Thigh circumference (ISO 7250 : 4.4.12)**

Description: Maximum circumference of the thigh measured at a level lower than the gluteal fold.

Method: Subject takes standing posture.

Instrument: Tape measure



**Figure 5.2.48**

#### **5.2.49 Calf circumference (ISO 7250 : 4.4.13)**

Description: Maximum circumference of the calf.

Method: Subject takes standing posture. Measurement is taken by passing the tape horizontally around the maximum circumference of the calf.

Instrument: Tape measure



**Figure 5.2.49**

#### **5.2.50 Ankle circumference**

Description: Minimum circumference of the calf.

Method: Subject takes standing posture.

Instrument: Tape measure



**Figure 5.2.50**

### 5.3 Measurements taken while subject sits

#### 5.3.1 Sitting height (erect) (ISO 7250 : 4.2.1)

Description: Vertical distance from a horizontal sitting surface to the vertex.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. Head is orientated in the Frankfurt plane.

Instrument: Anthropometer

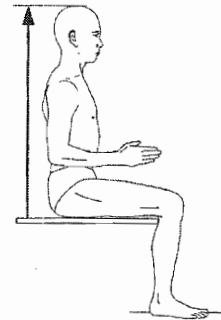


Figure 5.3.1

#### 5.3.2 Eye height, sitting (ISO 7250 : 4.2.2)

Description: Vertical distance from a horizontal sitting surface to the ectocanthion.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. Head is orientated in the Frankfurt plane.

Instrument: Anthropometer

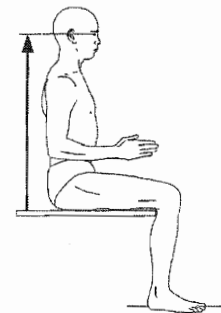


Figure 5.3.2

#### 5.3.3 Cervicale height, sitting (ISO 7250 : 4.2.3)

Description: Vertical distance from a horizontal sitting surface to the cervicale.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. Head is orientated in the Frankfurt plane.

Instrument: Anthropometer

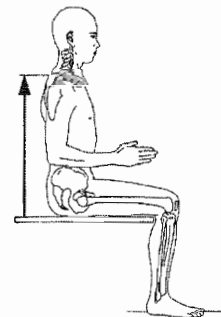


Figure 5.3.3

#### 5.3.4 Shoulder height, sitting (ISO 7250 : 4.2.4)

Description: Vertical distance from a horizontal sitting surface to the acromion.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer

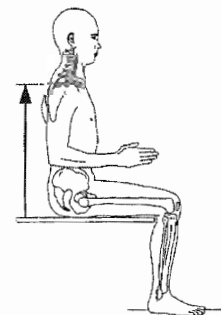


Figure 5.3.4

#### 5.3.5 Elbow height, sitting (ISO 7250 : 4.2.5)

Description: Vertical distance from a horizontal sitting surface to the lowest bony point of the elbow bent at a right angle with the forearm horizontal.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer

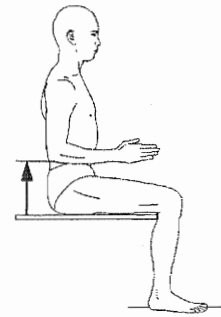


Figure 5.3.5

#### 5.3.6 Trochanterion height, sitting

Description: Vertical distance from a horizontal sitting surface to the trochanterion.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer or height gauge

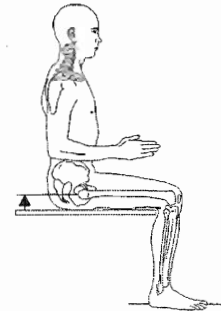


Figure 5.3.6

#### 5.3.7 Thigh clearance (ISO 7250 : 4.2.13)

Description: Vertical distance from a horizontal sitting surface to the highest point on the thigh.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer

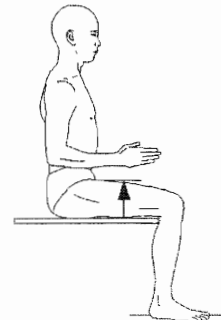


Figure 5.3.7

#### 5.3.8 Thigh height, sitting

Description: Vertical distance from the foot-rest surface to the highest point on the thigh.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer

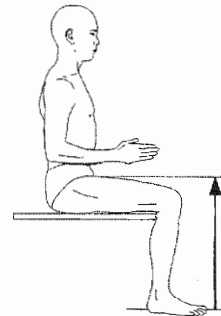


Figure 5.3.8

#### 5.3.9 Knee height (ISO 7250 : 4.2.14)

Description: Vertical distance from the foot-rest surface to the highest point of the superior border of the patella.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer



Figure 5.3.9

#### 5.3.10 Lower leg length (popliteal height) (ISO 7250 : 4.2.12)

Description: Vertical distance from the foot-rest surface to the tendon of the relaxed biceps femoris muscle immediately behind the knee.

Method: Subject takes sitting posture with thigh supported fully up to the back of the knee by the sitting surface. The movable arm of the measuring instrument is pushed gently against the tendon of the relaxed biceps femoris muscle. Measurement may be taken in standing posture with one leg put on a stand of an appropriate height and the knee bent at right angle.

Instrument: Anthropometer

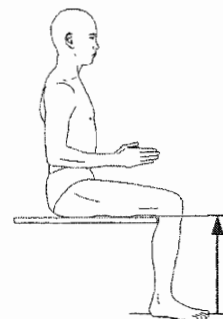


Figure 5.3.10

#### 5.3.11 Sitting surface height

Description: Vertical height from the foot-rest surface to the horizontal sitting surface.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Anthropometer

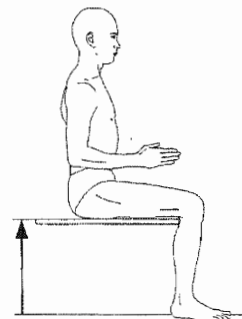


Figure 5.3.11

#### 5.3.12 Buttock-knee length (ISO 7250 : 4.4.7)

Description: Horizontal distance from the foremost point of the knee-cap to the rearmost point of the buttock.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. The measuring cube is placed so as to touch the rearmost point of the buttock and project it vertically on the sitting surface to determine the position of the rearmost point of the buttock. Distance is measured from the measuring cube to the foremost point of the knee-cap.

Instrument: Anthropometer, measuring cube

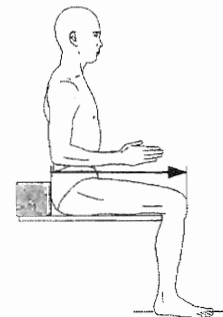


Figure 5.3.12

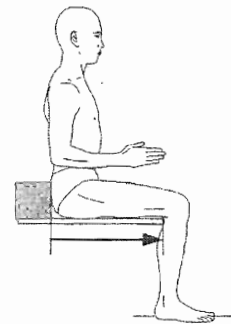


**5.3.13 Buttock-popliteal length (seat depth) (ISO 7250 : 4.4.6)**

Description: Horizontal distance from the forward edge of the sitting surface to the rearmost point of the buttock.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. The measuring cube is placed so as to touch the rearmost of the buttock and project it vertically on the sitting surface to determine the position of the rearmost point of the buttock. Distance is measured from the measuring cube to the forward edge of the sitting surface.

Instrument: Anthropometer, measuring cube



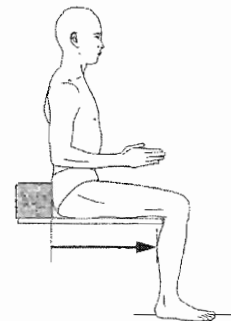
**Figure 5.3.13**

**5.3.14 Buttock-calf length, sitting**

Description: Horizontal distance from the forward edge of the buttock to the forward edge of the most bulging part of the calf.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. The measuring cube is placed so as to touch the rearmost of the buttock and project it vertically on the sitting surface to determine the position of the rearmost point of the buttock. Distance is measured from the measuring cube the forward edge of the calf.

Instrument: Anthropometer, measuring cube



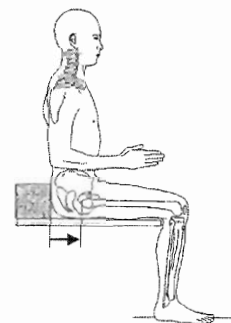
**Figure 5.3.14**

**5.3.15 Buttock-trochanterion length, sitting**

Description: Horizontal distance from the forward edge of the buttock to the trochanterion.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. The measuring cube is placed so as to touch the rearmost of the buttock and project it vertically on the sitting surface to determine the position of the rearmost point of the buttock. Distance is measured from the measuring cube to the trochanterion.

Instrument: Anthropometer, measuring cube



**Figure 5.3.15**

#### 5.3.16 Buttock-abdomen depth, sitting (ISO 7250 : 4.2.17)

Description: Horizontal distance between the maximum anterior protrusion of the abdomen and the maximum posterior protrusion of the buttock.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. The measuring cube is placed so as to touch the rearmost of the buttock and project it vertically on the sitting surface to determine the position of the rearmost point of the buttock. Distance is measured from the measuring cube to the maximum anterior protrusion of the abdomen.

Instrument: Anthropometer, measuring cube

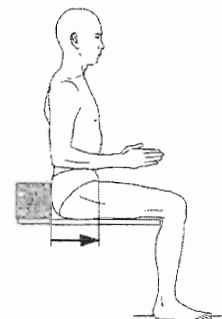


Figure 5.3.16

#### 5.3.17 Hip breadth, sitting (ISO 7250 : 4.2.11)

Description: Horizontal distance between the most protrudent parts of the right and left hips in sitting posture.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface. Both knees are put together. Measurement is taken without pressing into the flesh of the hips.

Instrument: Large sliding caliper or large spreading caliper



Figure 5.3.17

#### 5.3.18 Abdominal depth, sitting (ISO 7250 : 4.2.15)

Description: Maximum depth of the abdomen in sitting posture.

Method: Subject takes sitting posture with thighs supported fully up to the back of the knee by the sitting surface.

Instrument: Large sliding caliper

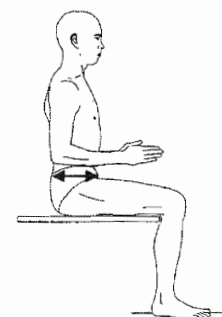


Figure 5.3.18

#### 5.3.19 Lower limb length, sitting

Description: Horizontal distance from the forward edge of the buttock to the bottom surface of the heel.

Method: Subject sits with the legs extending horizontally. Foot joints are bent at right angle.

Instrument: Large sliding caliper

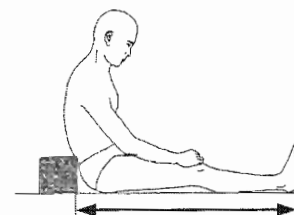


Figure 5.3.19

## 5.4 Measurements on hand and foot

### 5.4.1 Hand length (ISO 7250 : 4.3.1)

Description: Perpendicular distance from a line drawn between the distal points of the styloid processes of the radius and the ulna to the tip of the middle finger.

Method: Subject holds forearm horizontal with hand stretched out flat, palm up.

Instrument: Sliding caliper



Figure 5.4.1

### 5.4.2 Palm length perpendicular (ISO 7250 : 4.3.2)

Description: Distance from a line drawn between the distal points of the styloid processes of radius and the ulna to the proximal fingercrease of the middle finger.

Method: Subject holds forearm horizontal with hand stretched out flat, palm up.

Instrument: Sliding caliper.

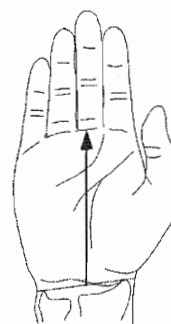


Figure 5.4.2

### 5.4.3 Index finger length (ISO 7250 : 4.3.4)

Description: Distance from the tip of the second finger to the proximal fingercrease on the palm of the hand.

Method: Subject holds forearm horizontal with hand stretched out flat and fingers spread, palm up.

Instrument: Sliding caliper.

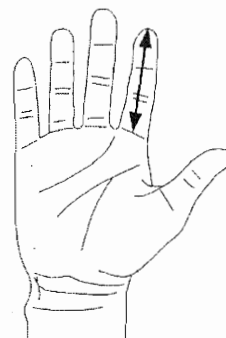


Figure 5.4.3

#### 5.4.4 Maximum distance finger I to V

Description: Distance between the tips of the first finger and the fifth finger when the fingers are spread as widely as possible.

Method: Subject spreads the fingers as widely as possible on a flat surface.

Instrument: Sliding caliper

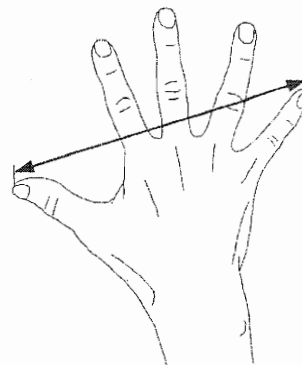


Figure 5.4.4

#### 5.4.5 Bistyloid breadth

Description: Breadth between the most-protrudent parts of the styloid processes of the radius and the ulna.

Method: Subject holds the hand stretched flat and the forearm horizontal, back of the hand up.

Instrument: Sliding caliper



Figure 5.4.5

#### 5.4.6 Hand breadth, diagonal

Description: Distance from the metacarpale radiale to the metacarpale ulnare.

Method: Subject stretches the hand flat on a flat surface with fingers II to V together, first finger apart.

Instrument: Sliding caliper

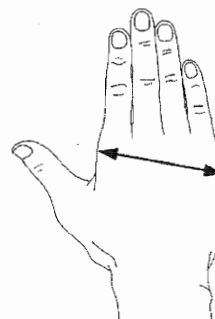


Figure 5.4.6

#### 5.4.7 Hand breadth at metacarpals (ISO 7250 : 4.3.3)

Description: Projected distance between the radial and ulnar metacarpals at the level of the metacarpal heads from the second to the fifth metacarpal.

Method: Subject holds forearm horizontal with hand stretched out flat, fingers II to V together, first finger apart.

Instrument: Sliding caliper

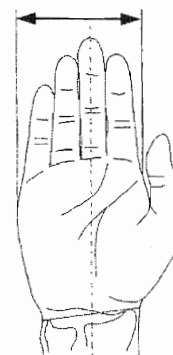


Figure 5.4.7

#### 5.4.8 Maximum hand breadth

Description: Distance from the metacarpale ulnare to the bone head of the first metacarpus (bulging part on the distal end of the metacarpus)

Method: Subject stretches out the hand flat with five fingers together.

Instrument: Sliding caliper

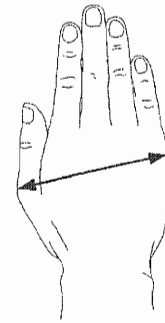


Figure 5.4.8

#### 5.4.9 Index finger breadth, proximal (ISO 7250 : 4.3.5)

Description: Maximum distance between medial and lateral surfaces of the second finger in the region of the joint between middle and proximal phalanges.

Method: Subject holds forearm horizontal with hand stretched out flat and fingers spread, palm up.

Instrument: Sliding caliper

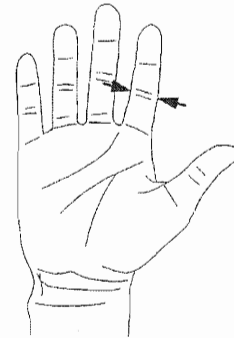


Figure 5.4.9

#### 5.4.10 Index finger breadth, distal (ISO 7250 : 4.3.6)

Description: Maximum distance between medial and distal surfaces of the second finger in the region of the joint between middle and distal phalanges.

Method: Subject holds forearm horizontal with hand stretched out flat and fingers spread, palm up.

Instrument: Sliding caliper

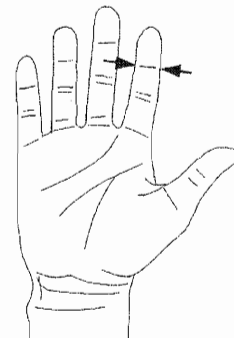


Figure 5.4.10

#### 5.4.11 Hand thickness

Description: Distance perpendicular to the palm from the third phalangeon to the palm.

Method: Subject stretches out the hand flat with fingers II to V together, first finger apart.

Instrument: Sliding caliper

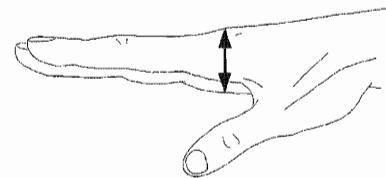


Figure 5.4.11

#### 5.4.12 Grip diameter, inside

Description: Inside diameter of a circle formed in a state that the tip of the thumb and the tip of the middle finger touch each other.

Method: Subject makes a ring with fingers by touching the tips of the thumb and the middle finger and pass a measuring cone through the ring. Diameter of the cone is measured at the level of the finger tip.

Instrument: Sliding caliper, measuring cone

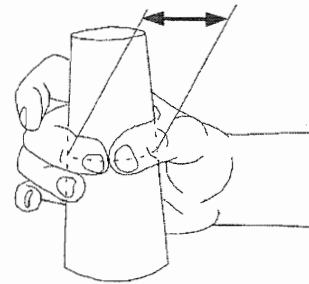


Figure 5.4.12

#### 5.4.13 Grip diameter, outside

Description: Maximum distance from the joint between bones of the thumb to the finger bone joint of the middle finger (joint between the metacarpus and the proximal phalanx) when making a circle in a state that the tip of the thumb touches the tip of the middle finger.

Method: Subject makes a ring in such a way that the tip of the thumb touches the tip of the middle finger.

Instrument: Sliding caliper

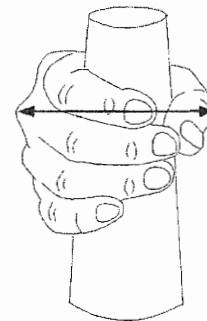


Figure 5.4.13

#### 5.4.14 Hand circumference

Description: Length of the circumference of hand passing through the metacarpale radiale and the metacarpale ulnare.

Method: Subject stretches out the hand flat with the fingers II to V together. Thumb apart.

Instrument: Tape measure

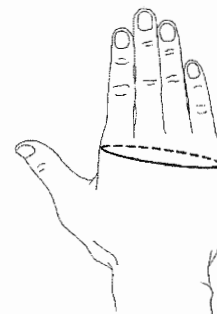


Figure 5.4.14

#### 5.4.15 Foot length (ISO 7250 : 4.3.7)

Description: Length of the projection of the foot axis from the pternion to the acropodion (the line connecting the tip of the second toe and the pternion).

Method: Subject stands with weight equally distributed on both feet.

Instrument: Large sliding caliper or foot length meter (full wearing type)

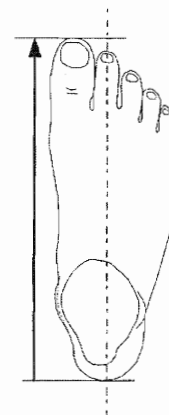


Figure 5.4.15

#### **5.4.16 Foot breadth, diagonal**

Description: Maximum breadth of the vertical cross-section passing through the metatarsale tibiale and the metatarsale fibulare.

Method: Subject stands with weight equally distributed on both feet.

Instrument: Sliding caliper



**Figure 5.4.16**

#### **5.4.17 Foot breadth (ISO 7250 : 4.3.8)**

Description: Maximum distance between medial and lateral surfaces of the foot perpendicular to the foot axis (line connecting the tip of the second toe and the pternion).

Method: Subject stands with weight equally distributed on both feet.

Instrument: Large sliding caliper



**Figure 5.4.17**

#### **5.4.18 Foot circumference**

Description: Length of the circumference of foot passing through the metatarsale tibiale and the metatarsale fibulare.

Method: Subject stands with weight equally distributed on both feet.

Instrument: Tape measure



**Figure 5.4.18**

#### **5.4.19 Sphyrion height**

Description: Vertical distance from the floor to the sphyrion.

Method: Subject stands with weight equally distributed on both feet.

Instrument: Height gauge.



**Figure 5.4.19**

#### 5.4.20 Sphyrion fibulare height

Description: Vertical distance from floor to the sphyrion fibulare.

Method: Subject stands with weight equally distributed on both feet.

Instrument: Height gauge



Figure 5.4.20

**6 Joints** Joints shall be as shown in Table 2 and Figure 2. In this Standard, the joints are specified as the points on the body surface to be determined uniquely from the morphological construction of joints as the standard centring on rotary motion of joints when expressing or measuring the body motion.

In addition, the centre of rotation of the joint motion is given in the column of Remarks of the definition of each joint.

- Remarks 1 If the joints specified in this Standard is very near one of the measuring points specified in clause 3, the definition of the measuring point applies to the joint as it is.
- 2 In order to make the joints in Table 2 correspond to the anthropic figure in Figure 2, the joint numbers are given in Figure 2.



**Table 2 Joints**

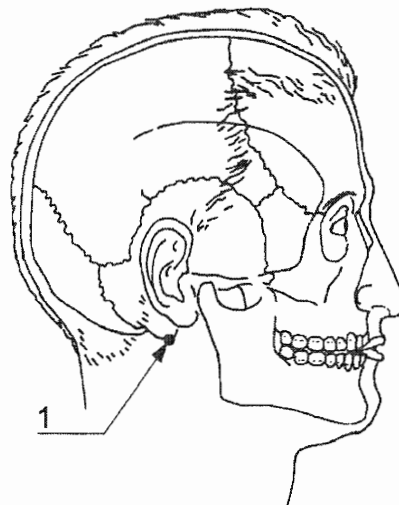
No.	Joint	Definition	Figure to be referred	English equivalent (informative)
1	TÔGAISEKITÛ-KANSETUTEN	The point on the tip of the mastoid process (the protrusion below the temporal bone situated on the back of the ear).  Remarks: The middle point of the line connecting the left and right occiput condyle and the central point of the ellipse made by the upper joint socket of the atlas.	Fig. 2 a)	head-neck joint
2	KEI-KYÔTUIKAN-KANSETUTEN	The cervicale (the point on the spinous process of the seventh cervical vertebra). See 12 of Table 1.  Remarks: The central point of the disc between the vertebrae of the seventh cervical vertebra and the first thoracic vertebra.	Fig. 2 b)	neck-thorax joint
3	KYÔ-YÔTUIKAN-KANSETUTEN	The point on the tip of the spinous process of the 12th vertebra.  Remarks: The central point of the disc between the vertebrae of the 12th thoracic vertebra and the first lumbar vertebra.	Fig. 2 b)	thorax-lumbar joint
4	YÔ-SENTUIKAN-KANSETUTEN	The point where the line connecting the left and right upper ilium edges and the rear median line cross.  Remarks: The central point of the disc between the vertebrae of the fifth lumbar vertebra and the sacral vertebra.	Fig. 2 b)	lumbar-sacral joint
5	KATAKANSETUTEN	The acromiale (of the outer edge of the part making the flat large protrusion at the end of the shelf like protuberance on the back and side surface of the scapula, the most exterior point). See 14 of Table 1.  Remarks: The central point of the sphere made of the joint socket of the scapula and the lumbus and the head of the humerus.	Fig. 2 b)	shoulder joint
6	TYÛKANSETUTEN	The radiale (the outside proximal point on the discal part at the proximal end of the radius). See 18 of Table 1.  Remarks: The central point of the axis of the cylinder made of the pulley of the humerus and the pulley trace of the ulna.	Fig. 2 b)	elbow joint

Table 2 (continued)

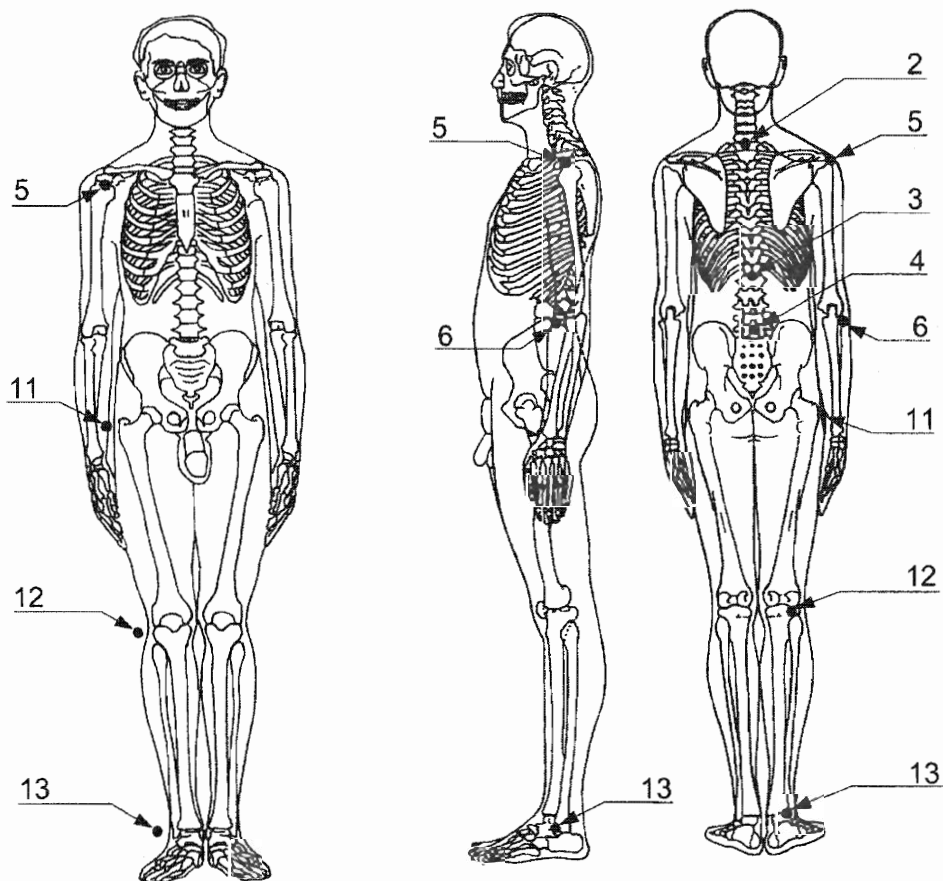
No.	Joint	Definition	Figure to be referred	English equivalent (informative)
7	SYUKON-KANSETUTEN	The stylium (the most distal end of the sharp part on the distal end of the radius). See 19 of Table 1. Remarks: The central point of the ellipse made of the joint socket on the distal end of the radius and the joint surface of the proximal carpus.	Fig. 2 b), c)	wrist joint
8	DAITI-DAIGOTYÛSYUSI-KANSETUTEN	The phalangion (the point on the proximal end of the proximal phalanx of the finger on the back side). See 23 of Table 1. Remarks: The central point of the hinge axis between the metacarpus and the proximal phalanx.	Fig. 2 c)	metacarpophalangeal joint
9	DAINI-DAIGOKIN'I-SISETUKAN-KANSETUTEN	The end of the bone head of the proximal phalanx when bending the joint. Remarks: The central point of the hinge axis between the proximal phalanx and the middle phalanx.	Fig. 2 c)	proximal interphalangeal joint
10	DAITI-DAIGOEN'I-SISETUKAN-KANSETUTEN	The end of the bone of the middle phalanx when bending the joint. Remarks: The central point of the axis of the hinge axis between the middle phalanx and the distal phalanx.	Fig. 2 c)	distal interphalangeal joint
11	KOKANSETUTEN	The trochanterion (the point on the highest edge of the large protrusion on the upper and outer side of the femur). See 25 of Table 1. Remarks: The central point of the sphere made of the acetabulum, the lumbus and the ligamentum transversum of the acetabulum and the head of the femur.	Fig. 2 b)	hip joint
12	SITUKANSETUTEN	The point obtainable on the outer side of the tibiale. Remarks: The middle point of the central points of two joints like a condyle that the medial condyle of femur makes with the lunula on the inside of the tibia and the lunula on the outside of the tibia.	Fig. 2 b)	knee joint

**Table 2** (concluded)

No.	Joint	Definition	Figure to be referred	English equivalent (informative)
13	SOKUKON-KANSETUTEN	<p>The most protruding point of the sphyrion.</p> <p>Remarks: The central point of the hinge joint axis that the joint surface made of the distal end of the tibia, the sphyrion of tibia and the sphyrion of fibula, and the talus pulley make.</p>	Fig. 2 b)	ankle joint
14	KETUZYÔTYÛSOKU-KANSETUTEN	<p>Of the joint part between the intermediate cuneiform bone and the second metatarsus, the highest point.</p> <p>Remarks: The centre of the joint the intermediate cuneiform bone and the second metatarsus make.</p>	Fig. 2 d)	tarsometatarsal joint
15	DAITI-DAIGO-TYÛSOKUSISSETU-KANSETUTEN	<p>The point on the proximal end of the proximal phalanx of the toe on the instep side of the leg.</p> <p>Remarks: The central point of the axis of the hinge axis between the metatarsus and the proximal phalanx.</p>	Fig. 2 d)	metatarso-phalangeal joint

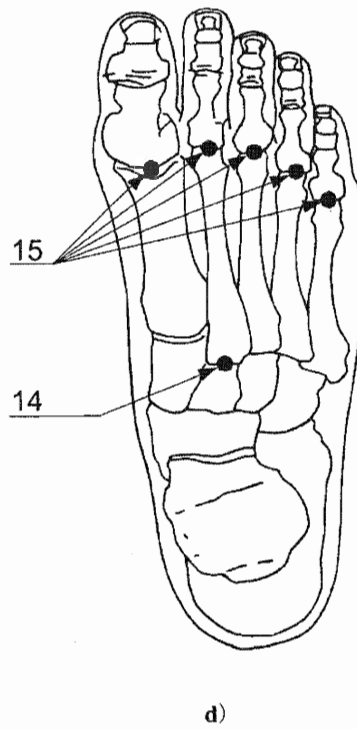
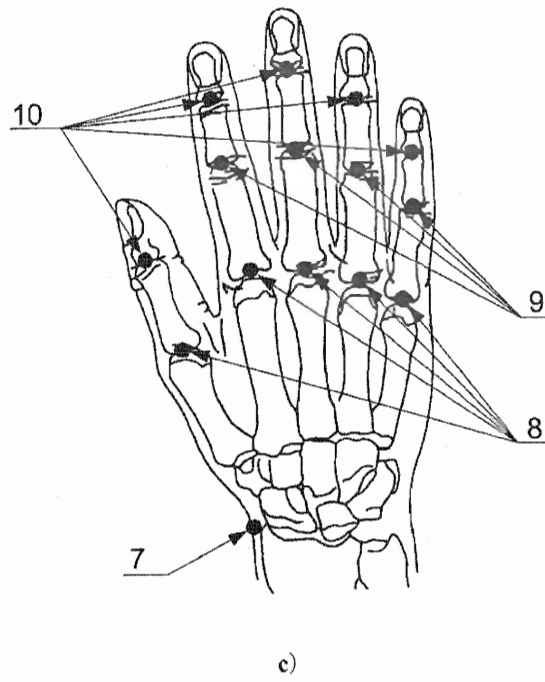


a)

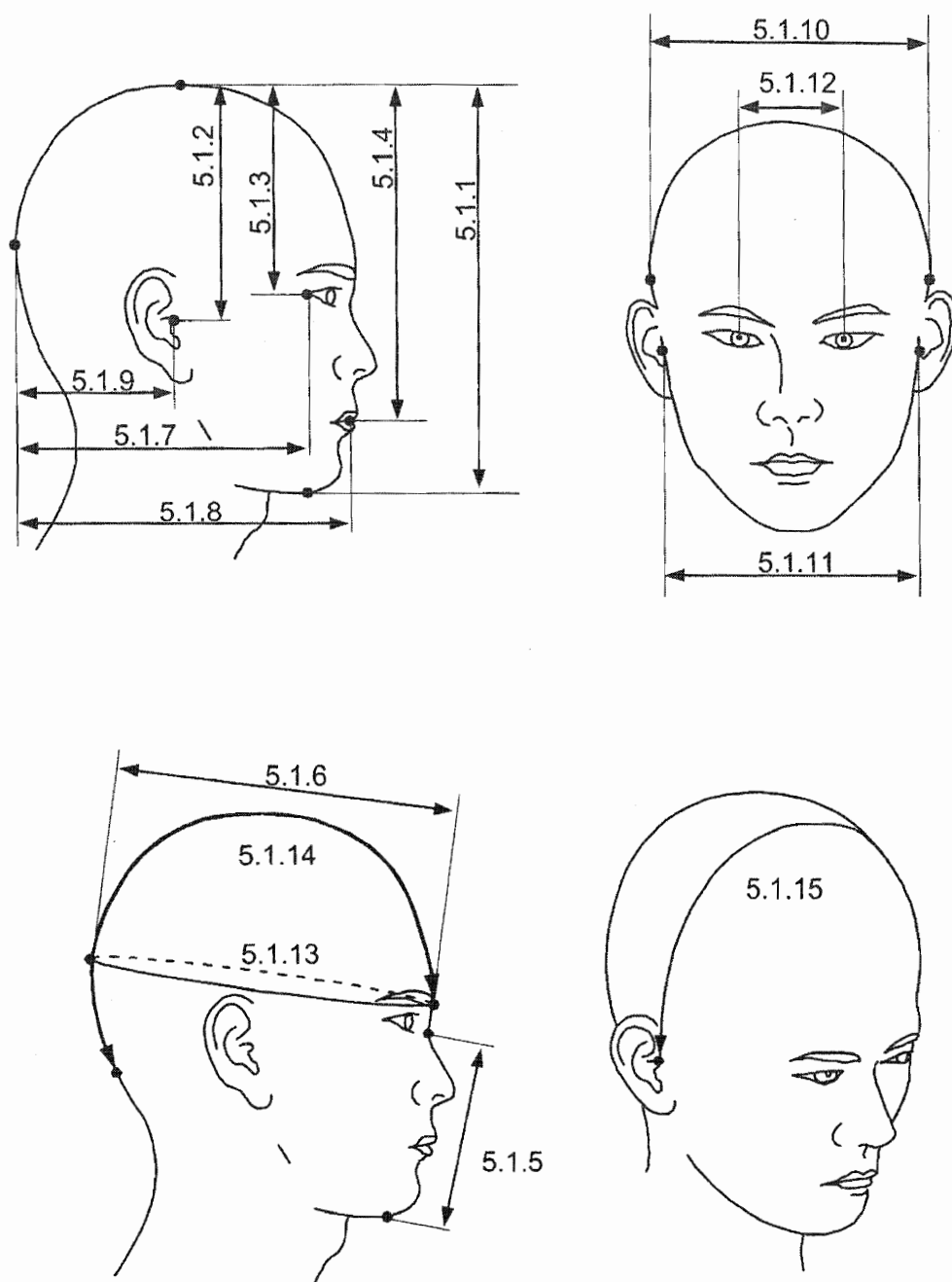


b)

**Figure 2 Joints**

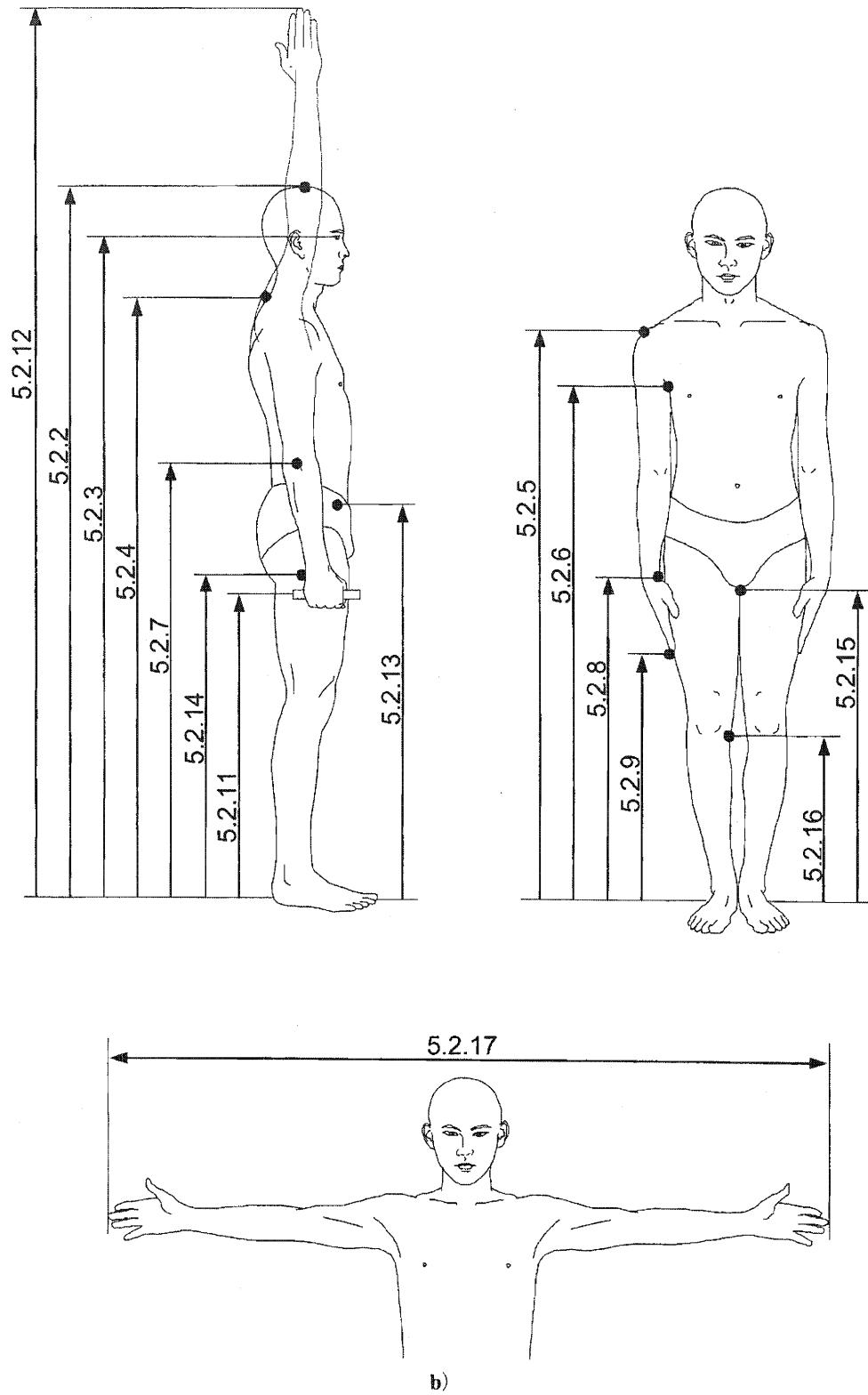


**Figure 2** (concluded)

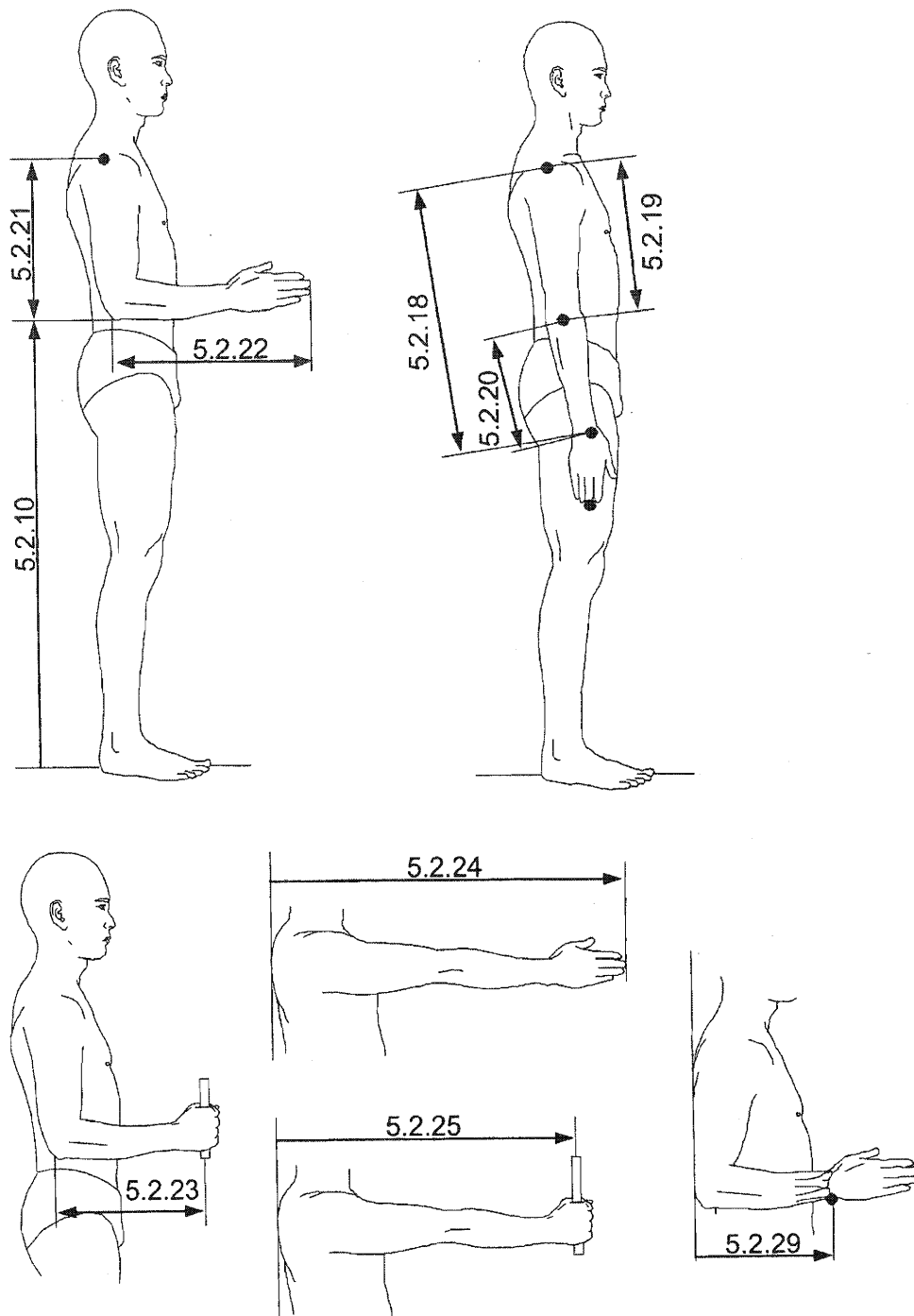


a)

**Attached Figure 1 Measuring items**



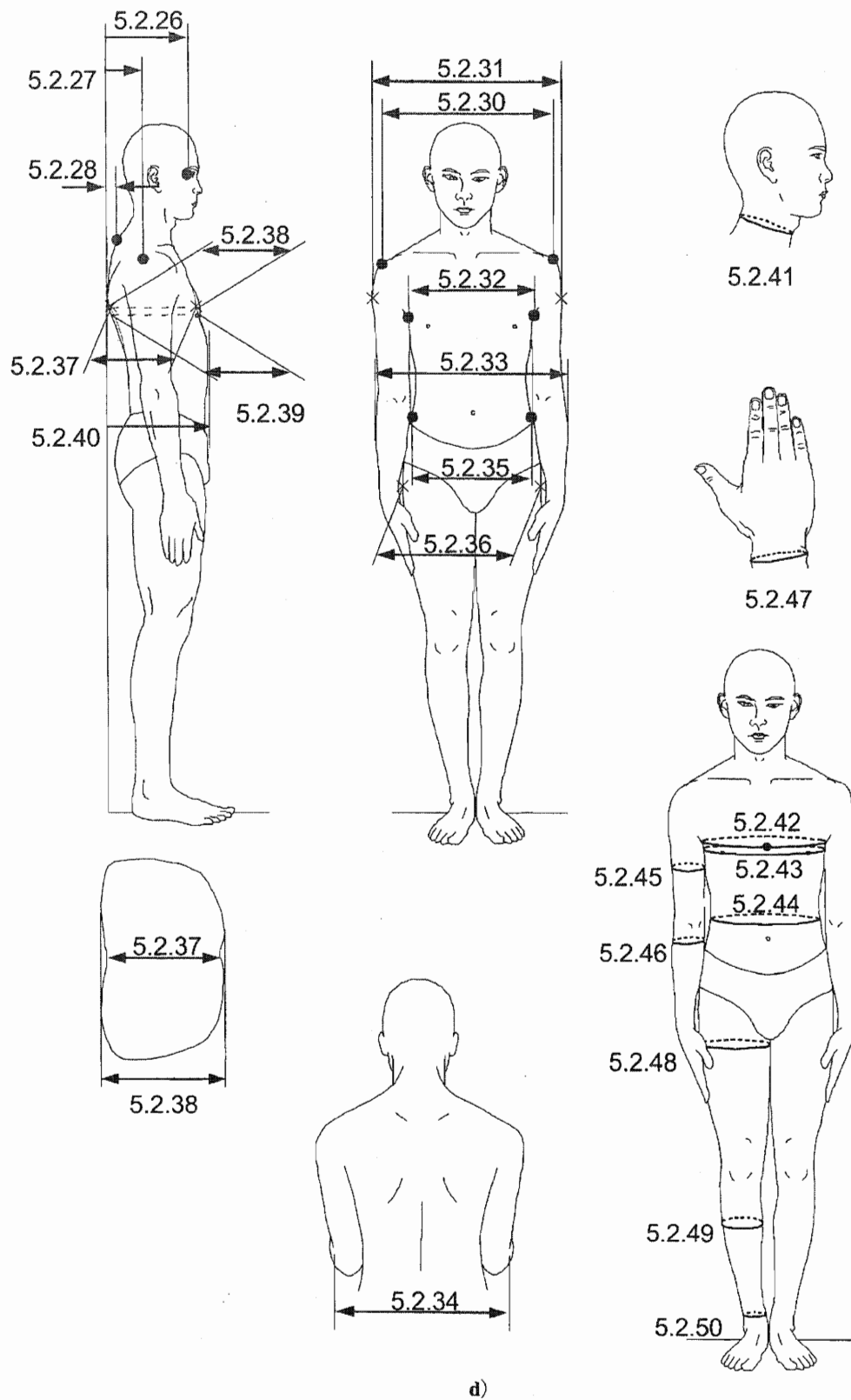
Attached Figure 1 (continued)



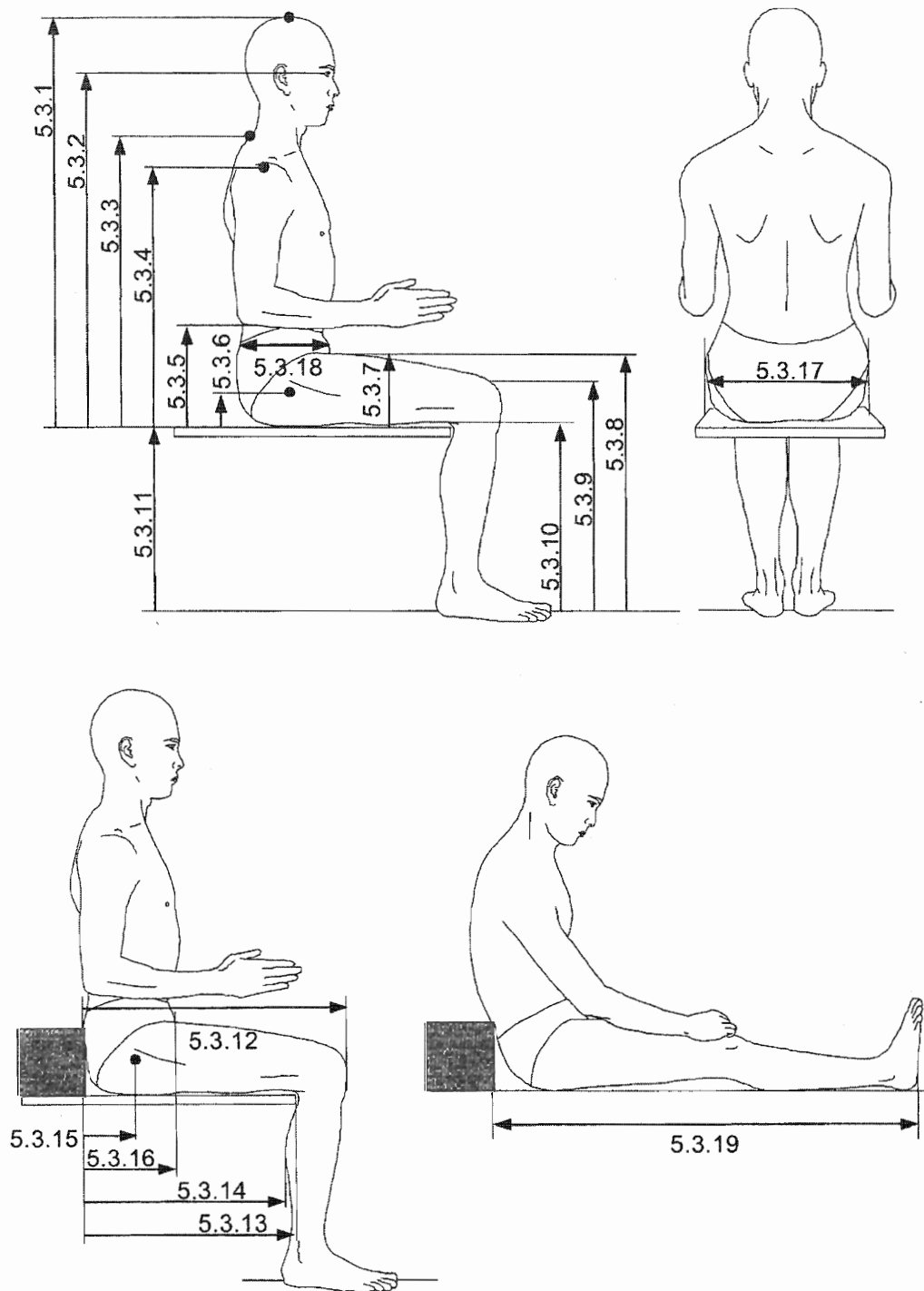
c)

**Attached Figure 1** (continued)



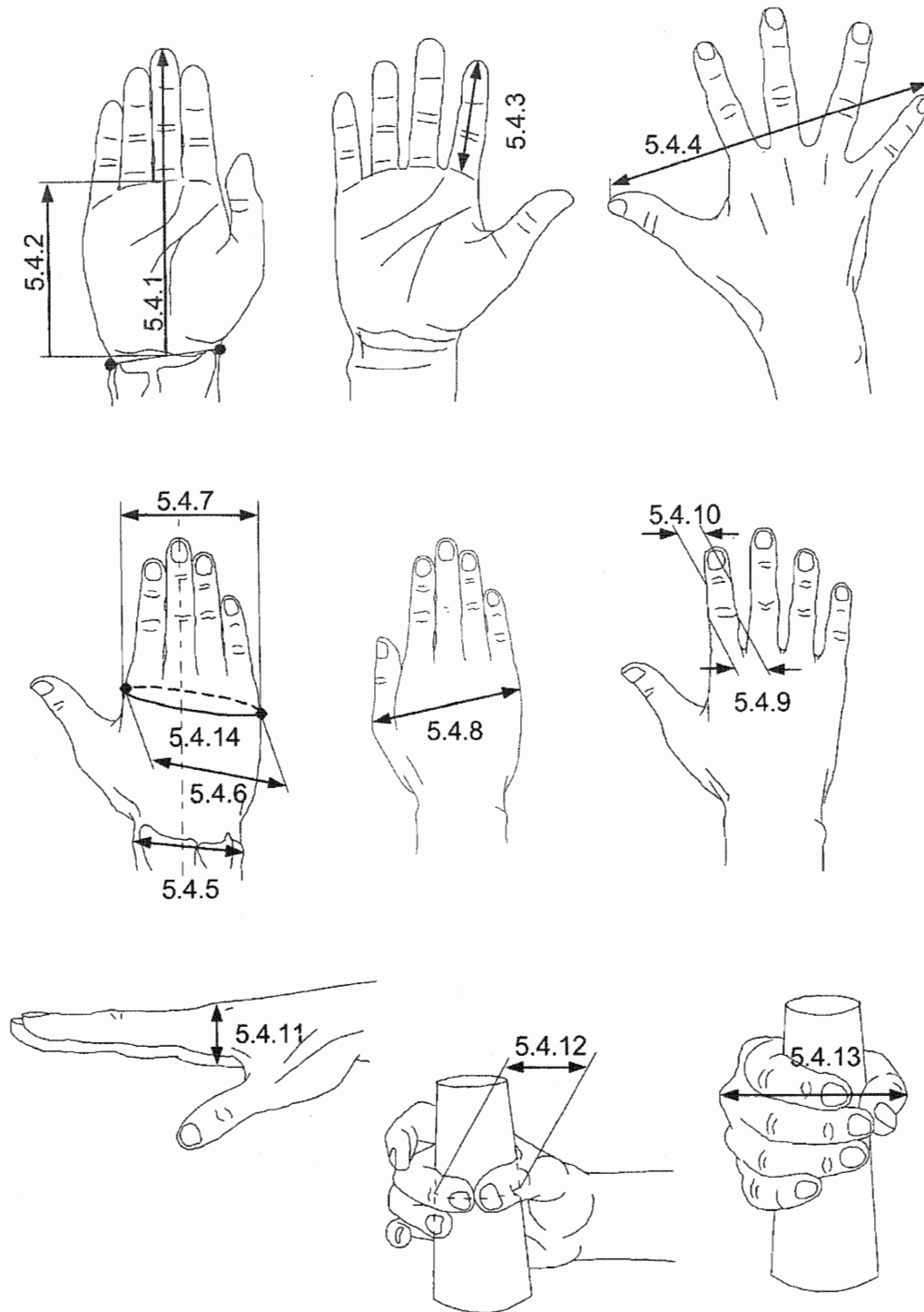


Attached Figure 1 (continued)



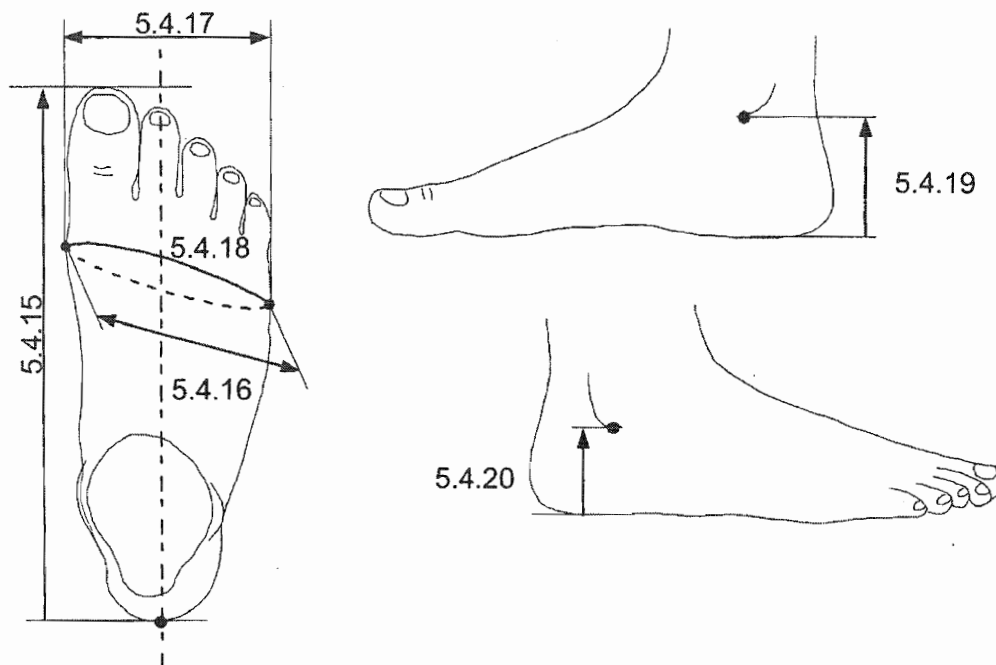
e)

Attached Figure 1 (continued)



f)

**Attached Figure 1 (continued)**



g)

**Attached Figure 1** (concluded)

**Annex 1 (normative)**  
**Thigh length and lower leg length**

The following items shall be calculated from the items described in the clause 5 in the body.

**1 Thigh length**

Description: Vertical distance from the trochanterion to the tibiale.

Method: Tibiale height (5.2.16) is subtracted from trochanterion height (5.2.14).

**2 Lower leg length**

Description: Vertical distance from the tibiale to the sphyrion.

Method: Sphyrion height (5.4.19) is subtracted from the tibiale height (5.2.16).

**Annex 2 (informative)**  
**Comparison table between JIS and corresponding International Standard**

<b>JIS Z 8500:2002</b> <i>Ergonomics—Basic human body measurements for technological design</i>		<b>ISO 7250:1996</b> <i>Ergonomics—Basic human body measurements for technological design</i>					
(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as “MOD/alteration” will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
1 Scope	Anthropometric measurements	<b>ISO 7250</b>	1	Same as <b>JIS</b> .	IDT	—	
2 Definitions 3 Measuring points	Definitions of the terms applying to this Standard and the definitions applying to the measuring points used in the description of the measuring items defined in this Standard.		2	Definitions applying to the terms used in this Standard.	MOD/ addition/ alteration/ deletion	Frontal plane and fibular are added as the anthropometric terms and 22 measuring points are also added. The following items included in <b>ISO</b> are deleted. anterior (2.2.2), bi (2.2.3), inferior (2.2.12), phalanx (2.2.20), process (2.2.22), superior (2.2.27).  In <b>ISO</b> , the Frankfurt plane is defined as “Standard horizontal plane at the level of the upper edge of the opening of the external auditory meatus	In <b>JIS</b> , the definitions applying to the terms of measuring items and the measuring points are added. In addition, the appellations of the measuring points are shown clearly in the descriptions of the measuring items, so that the definitions of the measuring points used in this time are added. Besides, of the items included in <b>ISO</b> , those self-evident in Japanese are deleted.  The definition of the Frankfurt plane in <b>ISO</b> in which the direction is included is the definition of the posture of the head at the time of measurement but not the definition of the plane. Even

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
						<p>and the lower border of the orbital margin, when the median plane of the head is held vertically", but <b>JIS</b> defines the Frankfurt plane as "plane determined by three points of the right and left tragions and the left orbitale".</p> <p>In <b>ISO</b>, inion is adopted as a measuring point but, in <b>JIS</b>, nuchale is adopted.</p>	<p>though the tragon is defined in <b>ISO 7250</b>, the ambiguous terms such as upper edge of the external auditory meatus is used. Moreover, it does not specify as to how to determine the midsagittal plane. So, <b>JIS</b> has come to define it with a plane composed of three measuring points. This definition is the same as the definition of Frankfurt plane given in <b>ISO 13406-2 : 1997</b>.</p> <p>In <b>ISO</b>, inion is used as "lowest point in the midsagittal plane of the occiput that can be palpated amid the nuchal muscles" but, in anthropometry in anthropology, there has been a worldwide agreement that the name of this definition is "nuchale". Inion is to be defined as "central point of the external rear head protrusion in the midsagittal plane".</p>

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
						<p>In <b>ISO</b>, nasion and sellion are specified as the same measuring points but, in <b>JIS</b>, sellion is adopted.</p> <p>In <b>ISO</b>, the measuring point is indicated as menton : gnathion, but <b>JIS</b> adopts gnathion only.</p>	<p>In anthropometry in the anthropology, nasion is defined so far as "intersecting point of the frontal nasal bone symphysis and the midsagittal line" and sellion as "point of greatest indentation of the nasal root depression on the midsagittal line" as a worldwide agreement and, therefore, the definitions of both terms are different. In addition, in the measurement of living body, nasion is very difficult to be found and, as a result, reliability is low, so that the sellion easy to be found has been adopted.</p> <p>In <b>JIS</b> before the revision, gnathion has been used. In the text books for anthropometry on the market, the gnathion is rather used. In this Standard, gnathion is used.</p>
4 Measuring conditions	Measuring conditions to be considered that the description together with the test results is important.		3	Measuring conditions to be considered that the description together with the test results is important.	MOD/addition/alteration	In <b>JIS</b> , the clause of measuring posture is added.	In <b>ISO</b> , the measuring posture is given concretely in each measuring item but, in <b>JIS</b> , it is defined previously en bloc in independent clause.



(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as "MOD/alteration" will be proposed to ISO at the revision of ISO 7250]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
						In ISO, lower leg is to be measured in a state of hanging freely but, in JIS, in a state of the foot bottom supported.	This is because that the posture of the foot bottom supported is of higher stability than that of the lower leg hanging freely, the state of the lower leg hanging freely is of smaller dimension caused by tension of muscle and the data measured in the state of the foot bottom supported are accumulated nationally.
5.1.1 5.1.2 5.1.3 5.1.4	Total head height Tragion to vertex height Ectocanthion to vertex height Stomion to vertex height				MOD/ addition		Original items of JIS which have been used are added.
5.1.5	Face length		4.3.11	Face length (nasion-menton)	MOD/ alteration	In ISO, the description gives "distance from the nasion to the menton" but in this Standard, the description is "distance from the sellion to the gnathion".	In this Standard, the measuring point "sellion" is adopted (7 in Table 1) but not nasion and "gnathion" is additionally used (9 in Table 1).

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
5.1.6	Head length		4.3.9	Head length	IDT	—	
5.1.7	Occiput to ectocanthion distance				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.1.8	Occiput to stomion distance						
5.1.9	Occiput to tragion distance						
5.1.10	Head breadth		4.3.10	Head breadth	IDT	—	
5.1.11	Bitragion breadth				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.1.12	Interpupillary breadth						
5.1.13	Head circumference		4.3.12	Head circumference	IDT	—	
5.1.14	Sagittal arc		4.3.13	Sagittal arc	MOD/ alteration	In <b>ISO</b> , the description is "arc from the glabella over the skull to the inion" but, in this Standard it is "length of arc from the glabella to the nuchale passing through the vertex along the head surface".	In this Standard, "nuchale" is adopted as a measuring point (5 in Table 1) but inion is not used.
5.1.15	Bitragion arc		4.3.14	Bitragion arc	IDT	—	

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
5.2.1	Body mass (weight)		4.1.1	Body mass (weight)	IDT	—	
5.2.2	Stature (body height)		4.1.2	Stature (body height)			
5.2.3	Eye height		4.1.3	Eye height			
5.2.4	Cervicale height				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.2.5	Shoulder height		4.1.4	Shoulder height	IDT	—	
5.2.6	Anterior axillary height				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.2.7	Radiale height						
5.2.8	Radiale stylium height						
5.2.9	Dactylion height						
5.2.10	Elbow height		4.1.5	Elbow height	IDT	—	
5.2.11	Fist (grip axis) height		4.4.4	Fist (grip axis) height	IDT	—	
5.2.12	Dactylion height, over head				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.2.13	Iliac spine height, standing		4.1.6	Iliac spine height, standing	IDT	—	
5.2.14	Trochanterion height				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.2.15	Crotch height		4.1.7	Crotch height	MOD/ alteration	A sentence "The arm breadth is added to the dimension read" is added.	If it is not done so, smaller value than actual dimension by the arm breadth is obtained.

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
5.2.16	Tibiale height		4.1.8	Tibiale height	IDT	—	
5.2.17	Span				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.2.18	Upper limb length						
5.2.19	Upper arm length						
5.2.20	Forearm length						
5.2.21	Shoulder-elbow length		4.2.6	Shoulder-elbow length	IDT	—	
5.2.22	Forearm-fingertip length		4.4.5	Forearm-fingertip length			
5.2.23	Elbow-grip length		4.4.3	Elbow-grip length			
5.2.24	Arm reach from back				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.2.25	Grip reach; forward reach		4.4.2	Grip reach; forward reach	IDT	—	
5.2.26	Wall-ectocanthion distance				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.2.27	Wall-acromion distance		4.4.1	Wall-acromion distance	MOD/ alteration	<b>ISO</b> specifies to measure in a posture "... arms fully extended horizontally" but, in this Standard, the measurement is taken in a normal posture with arms hanging naturally.	Acromion is difficult to be found in a state of the arms extended horizontally and, if a mark is given on the acromion in a state of the arms hanging downwards, the mark put on the skin may deviate from the position of the acromion when extending

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
							the arms later on. This is why the measurement taken in the normal standing posture is reliable.
5.2.28	Wall-cervicale distance				MOD/addition		Original item of <b>JIS</b> which has been used is added.
5.2.29	Elbow-wrist length		4.2.7	Elbow-wrist length	IDT	—	
5.2.30	Shoulder (biacromial) breadth		4.2.8	Shoulder (biacromial) breadth			
5.2.31	Shoulder (bideltoid) breadth		4.2.9	Shoulder (bideltoid) breadth			
5.2.32	Chest breadth, standing		4.1.11	Chest breadth, standing	MOD/alteration	A sentence "Females wear their usual brassiere" is added.	Dimensions change in any case when brassiere is worn, so that it is stated in <b>JIS</b> (items 5.2.39 and 5.2.43) as clearly as in <b>ISO</b> (4.2.16 and 4.4.9).
5.2.40	Body depth, standing		4.1.10	Body depth, standing			
5.2.33	Maximum body breadth				MOD/addition		Original item of <b>JIS</b> which has been used is added.
5.2.34	Elbow-to-elbow breadth		4.2.10	Elbow-to-elbow breadth	IDT	—	
5.2.35	Bicristal breadth				MOD/addition		Original item of <b>JIS</b> which has been used is added.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as "MOD/alteration" will be proposed to ISO at the revision of ISO 7250]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
5.2.36 5.2.37	Hip breadth, standing Chest depth, standing		4.1.12 4.1.9	Hip breadth, standing Chest depth, standing	IDT	—	
5.2.38	Thorax depth at mesosternale				MOD/ addition		Original item of JIS which has been used is added.
5.2.39 5.2.41	Thorax depth at the nipple Neck circumference		4.2.16 4.4.8	Thorax depth at the nipple Neck circumference	IDT	—	
5.2.42	Chest circumference at mesosternale				MOD/ addition		Original item of JIS which has been used is added.
5.2.43 5.2.44	Chest circumference Waist circumference		4.4.9 4.4.10	Chest circumference Waist circumference	IDT	—	
5.2.45 5.2.46	Upper arm circumference Forearm circumference				MOD/ addition		Original items of JIS which have been used are added.
5.2.47 5.2.48 5.2.49	Wrist circumference Thigh circumference Calf circumference		4.4.11 4.4.12 4.4.13	Wrist circumference Thigh circumference Calf circumference	IDT	—	
5.2.50	Ankle circumference				MOD/ addition		Original item of JIS which has been used is added.

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
5.3.1	Sitting height (erect)		4.2.1	Sitting height (erect)	MOD/alteration	In <b>ISO</b> , the measurement is to be taken in a state of sitting with lower legs hanging freely but, in this Standard, the measurement is to be taken in the state of the foot bottom supported.	This is because that the state of the foot bottom supported is of higher stability than that of the lower legs hanging freely, in some items smaller dimensions are obtained in the state of the lower legs hanging due to the tension of the muscle and the data resulted from the state of the foot bottom supported have been accumulated nationally.
5.3.2	Eye height, sitting		4.2.2	Eye height, sitting			
5.3.3	Cervicale height, sitting		4.2.3	Cervicale height, sitting			
5.3.4	Shoulder height, sitting		4.2.4	Shoulder height, sitting			
5.3.5	Elbow height, sitting		4.2.5	Elbow height, sitting			
5.3.12	Buttock-knee length		4.4.7	Buttock-knee length			
5.3.13	Buttock-popliteal length (seat depth)		4.4.6	Buttock-popliteal length (seat depth)			
5.3.16	Buttock-abdomen depth, sitting		4.2.17	Buttock-abdomen depth, sitting			
5.3.17	Hip breadth, sitting		4.2.11	Hip breadth, sitting			
5.3.6	Trochanterion height, sitting				MOD/addition		Original items of <b>JIS</b> which have been used are added.
5.3.7	Thigh clearance		4.2.13	Thigh clearance	IDT	—	
5.3.8	Thigh height, sitting				MOD/addition		Original item of <b>JIS</b> which has been used is added.
5.3.9	Knee height		4.2.14	Knee height	IDT	—	
5.3.10	Lower leg length (popliteal height)		4.2.12	Lower leg length (popliteal height)			

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
5.3.11 5.3.14 5.3.15	Sitting surface height Buttock-calf length, sitting Buttock-trochanterion length, sitting				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.3.18	Abdominal depth, sitting		4.2.15	Abdominal depth, sitting	IDT	—	
5.3.19	Lower limb length, sitting				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.4.1 5.4.2 5.4.3	Hand length Palm length perpendicular Index finger length		4.3.1 4.3.2 4.3.4	Hand length Palm length perpendicular Index finger length	IDT	—	
5.4.4 5.4.5 5.4.6	Maximum distance finger I to V Bistyloid breadth Hand breadth, diagonal				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.4.7	Hand breadth at metacarpals		4.3.3	Hand breadth at metacarpals	IDT	—	
5.4.8	Maximum hand breadth				MOD/ addition		Original item of <b>JIS</b> which has been used is added.



(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures  [Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
5.4.9	Index finger breadth, proximal		4.3.5	Index finger breadth, proximal	IDT	—	
5.4.10	Index finger breadth, distal		4.3.6	Index finger breadth, distal			
5.4.11	Hand thickness				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
5.4.12	Grip diameter, inside						
5.4.13	Grip diameter, outside						
5.4.14	Hand circumference						
5.4.15	Foot length		4.3.7	Foot length	MOD/ alteration	Foot length meter (full wearing type) is added to the measuring tool.	Addition of the measuring tool which has been used in Japan.
5.4.16	Foot breadth, diagonal				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
5.4.17	Foot breadth		4.3.8	Foot breadth	MOD/ alteration	In <b>ISO</b> , the measurement in this item specifies to use the spreading caliper but, in this Standard, the large sliding caliper is required to be used.	Spreading caliper is a tool for measuring the distance between two points and it is impossible to measure in a way to cross at right angle with the longer axis using this tool.

(I) Requirements in <b>JIS</b>		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between <b>JIS</b> and the International Standard by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	[Clauses or subclauses classified as "MOD/alteration" will be proposed to <b>ISO</b> at the revision of <b>ISO 7250</b> ]
5.4.18 5.4.19 5.4.20	Foot circumference Sphyrion height Sphyrion fibulare height				MOD/ addition		Original items of <b>JIS</b> which have been used are added.
6	Joints				MOD/ addition		Original item of <b>JIS</b> which has been used is added.
Annex 1 (normative)	Thigh length and lower leg length				MOD/ addition		Original item of <b>JIS</b> which has been used is added.

Designated degree of correspondence between **JIS** and International Standard: MOD

Remarks 1 Symbols in sub-columns of classification by clause in the above table indicate as follows:

- IDT: Identical in technical contents.
- MOD/deletion: Deletes specification item(s) or content(s) of International Standard.
- MOD/addition: Adds specification item(s) or content(s) not included in International Standard.
- MOD/alteration: Alters the specification content(s) included in International Standard.

2 Symbol in column of designated degree of correspondence between **JIS** and International Standard in the above table indicates as follows:

- MOD: Modifies International Standard.

Errata for JIS (English edition) are printed in *Standardization Journal*, published monthly by the Japanese Standards Association, and also provided to subscribers of JIS (English edition) in *Monthly Information*.

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